JANUARY 20, 1945

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. III. OF VOL. I., 1945. LONDON, SATURDAY, JANUARY 20, 1945 Pp. 64—Price 1s.
No. 6334. VOL. CCXLVIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

The Library of Congress
4278 FEB 14 1945

We invite you to write to us

Paper restrictions make it difficult for us to keep doctors fully informed of our advances in chemotherapy.

We therefore cordially invite you to make use of our Medical Information Department whenever you feel that we may be of assistance.

MEDICAL SPECIALITIES Manufactured by MAY & BAKER LIMITED
Distributors PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LIMITED DAGENHAM

7055

Free to the Medical Profession on request. Cloth bound Ed. 5s.

ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO"
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

129 Illustrations (10 coloured) 12s. 6d. net; postage 6d.

DISEASES OF THE TESTICLE
By HAMILTON BAILEY, F.R.C.S.
"... all that anyone need know on the subject."—*The Lancet*
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1

Third Edition Reprinting. 7s. 6d. net + 4d. postage

PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
Demy 8vo. 189 + vii pages. 9 Graphs. 22 Tables.
"A notable success."—B.M.J.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

CONTROL OF COMMON FEVERS.
By twenty-one Contributors. Arranged by Dr. ROBERT CRUICKSHANK and EDITOR OF THE LANCET.
Demy 8vo. 361 + vi pages. 33 Graphs. 38 Tables.
12s. 6d. net + 6d. postage.
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2.

ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE
By H. S. LE MARQUAND, M.D. (Lond.), M.R.C.P. (Lond.), Physician, Royal Berkshire Hospital;
and F. H. W. TOZER, M.D. (Lond.), M.R.C.P. (Lond.), Sometime Clinical Assistant, Royal Berkshire Hospital
Demy 8vo 298 + x pages Illustrated 15s. plus postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4.

SECOND EDITION IN PREPARATION.

DISEASES OF THE THYROID GLAND.
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
"Mr. Joll has presented his fellow practitioners and students with a monumental volume. They need not trouble to search the literature published up to the time this volume went to press, for they will find everything relevant within its covers."
—BRITISH JOURNAL OF SURGERY.
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

NOW PUBLISHED

SURGERY: A TEXTBOOK FOR STUDENTS
By CHARLES AUBREY PANNETT, B.Sc., M.D., F.R.C.S.
Professor of Surgery, University of London; Director of the Surgical Unit, St. Mary's Hospital, London; sometime member of the Court of Examiners R.C.S. Eng., and Examiner to the Universities of London, Manchester, and Cardiff
740 + xii Extensively illustrated throughout text 35s. net
The book gives a short account of general surgery. Due to the careful selection of proved methods it is unencumbered by obsolete recommendations; nor is it burdened by discussions of controversial points in pathology or details of operative technique unnecessary for the undergraduate student. Yet always the indications are clearly stated. Whilst written primarily for the undergraduate, the information given is full enough to form a basis of knowledge for students of advanced surgery.
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4.

THE CARE OF TUBERCULOSIS IN THE HOME
By JAMES MAXWELL, M.D., F.R.C.P.
Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital; Consulting Physician Royal National Sanatorium, Bournemouth.
Demy 8vo. 106 + xii Illustrations. 7s. 6d. net, plus postage
Hodder & Stoughton, Ltd., 20, Warwick-square, London, E.C.4.

THREE WELL-KNOWN VOLUMES

THE PRACTICE OF REFRACTION
By SIR STEWART DUKE-ELDER
M.D., F.R.C.S.
Surgeon-Oculist to H.M. the King
Reprint of Fourth Edition
Ready early in February.
183 Illustrations 15s.
"Will be of value to graduates studying eye-work, and also to ophthalmic medical practitioners."
—BRITISH MEDICAL JOURNAL.

RECENT ADVANCES IN ENDOCRINOLOGY
By A. T. CAMERON
D.Sc., F.R.I.C., F.R.S.C.
Professor of Biochemistry, Faculty of Medicine, University of Manitoba
Fifth Edition
73 Illustrations, including 3 Plates 18s.
"The work gives an excellent summary of the clinical and biochemical aspects of endocrinology."
—EDINBURGH MEDICAL JOURNAL.

DISEASES OF THE EYE
By SIR JOHN HERBERT PARSONS
C.B.E., D.Sc., F.R.C.S., F.R.S.
Consulting Ophthalmic Surgeon, University College Hospital
Tenth Edition
Revised with the assistance of
H. B. STALLARD, M.D., F.R.C.S.
21 Plates (20 in Colour)
372 Text-figures 25s.
"It is packed with all the essentials of eye work and is a useful book of reference as well."
—THE LANCET.

J. & A. CHURCHILL LTD. 104 GLOUCESTER PLACE LONDON W.1

Cardophylin

A SPECIALLY PREPARED COMPOUND OF THEOPHYLLINE-ETHYLENEDIAMINE

3 MAIN INDICATIONS FOR ITS EXHIBITION

1 DISEASES OF THE CARDIOVASCULAR SYSTEM:

Angina Pectoris: gives rapid relief from attacks and reduces their frequency.

Coronary Thrombosis: promotes anastomosis and collateral circulation.

Congestive Heart Failure: augments the blood supply and increases oxygenation of the myocardium.

2 ASTHMA:

relieves, frequently with dramatic effect, attacks of

Paroxysmal Nocturnal Dyspnoea,

Cardiac Asthma,

Bronchial Asthma,

Cheyne-Stokes Respiration.

3 ŒDEMA:

Cardophylin is a powerful, yet harmless, diuretic with a smooth and efficient action. It has no irritant effect on the kidneys and is particularly useful in post-operative anuria.

In Tablets, Ampoules and Suppositories. *Literature, with extracts from numerous clinical reports, and samples, sent on request.*

WHIFFEN & SONS, LTD. · CARNWATH RD. · FULHAM · LONDON · S.W.6

THE THERAPY OF ASTHMA

The treatment of asthma resolves itself into a consideration of underlying factors and causes. Often in ASTHMA *the underlying cause* is not discoverable or changes from time to time—now irritant dusts, now bacterial infection, etc. *The underlying factor* is fortunately always the same—bronchospasm.

Thus sometimes causative agents can be removed or mitigated but always the underlying factor—bronchospasm—can be treated, successfully, with FELSOL.

Most cases of Asthma are chronic and demand patience in treatment—persistence with FELSOL will yield the highest possible percentage of successes.

NO MORPHIA — NO NARCOTICS

Physicians' samples and literature willingly sent on request

Felsol REGD. POWDERS for ASTHMA

BRITISH FELSOL COMPANY LTD., 206/212 St. John St., London, E.C.1. *Telephone: Clerkenwell 5826. Telegrams: Felsol, Smith, London*

JANUARY 20, 1945

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6334 LONDON: SATURDAY, JANUARY 20, 1945 CCXLVIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Management of Hospitals in Peace and War — SOMERVILLE HASTINGS, FRCS 71
Bacteriolytic Action of Penicillin — E. W. TODD, MD (*charts*) 74
Pneumococcal Lobar Pneumonia treated with Sulphamezathine: a Further Study — W. A. RAMSAY, MD, R. W. LUXTON, MD, PAUL STEINER, MD, G. STEWART SMITH, MD .. 78
Spread of Infective Hepatitis — Lieut.-Colonel RAYMOND KIRK, MRCP 80
Significance of Mites and their Eggs in Human Fæces — Sir PHILIP MANSON-BAHR, FRCP, W. J. MUGGLETON, FIMLT (*illus*) 81
New Technique of Spinal Anæsthesia — A. R. HUNTER, FRFPS, DA 82
Creams for Testing the Sensitivity of Organisms to Bacteriostatics — H. B. MAY, MRCP, DAVID STERN, MRCS (*illus.*) 83
Metazoan Immunity — Prof. D. B. BLACKLOCK, MD .. 84

PRELIMINARY COMMUNICATIONS

Penicillin Lamellæ in Eye Conditions — Wing-Commander J. C. NEELY, RM, Squadron-Leader A. G. CROSS, MD 85

SPECIAL ARTICLES

Technique for Surgical Photography — B. RICHARDSON BILLINGS, MRCS (*illus.*) 93
Hospital Food. II. What is Good Feeding? 94
Canada 95

LEADING ARTICLES

THE INFECTED HAND 87
CAVERNOUS SINUS THROMBOSIS .. 87
A REGIONAL PLAN 88

ANNOTATIONS

University Students as Critics of Factory Life 89
Prepayment Health Schemes in the USA 90
The Child with a Crippled Heart .. 90
Nitrogen Balance in Burns 91
Punishment for Illness 91
Treatment of Alcoholism 91
Penicillin in Eye Infections 92
Medical Officers of Health on the White-paper 92
Negotiations Open 92

PUBLIC HEALTH

Some Observations on Scabies and its Treatment — HORACE A. NATHAN, MRCS (*charts*) 97
Infectious Disease in England and Wales 98

MEDICAL SOCIETIES

Nutrition Society: Nutritional Rôle of the Alimentary Microflora 85

ON ACTIVE SERVICE

Casualties — Awards — Memoir: Captain F. Murray Wainman (*portrait*) 96

REVIEWS OF BOOKS

Tropical Medicine. Sir Leonard Rogers, FRCS, FRS; Sir John Megaw, MB 86
Annual Review of Physiology. Editors: J. M. Luck; V. E. Hall 86
Practical Anæsthetics. J. Ross Mackenzie, MD, DA 86

LETTERS TO THE EDITOR

Who Should Feed the Sick? (Sir Robert Hutchison, FRCP) 98
Treatment of Diphtheria (Dr. E. H. R. Harries) 98
In Which We Might Serve (Dr. P. D. H. Chapman) 99
Trachoma and Sulphonamides (Dr. F. S. Lavery) 99
Death after Intravenous Neptal (Dr. E. Frankel) 99
Medical Films (Dr. S. J. Reynolds) 99
Amœbiases (Dr. A. R. D. Adams) 99
The Typhoid-Salmonella Group (Dr. F. Marsh) 100

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents 95

OBITUARY

Walter Essex Wynter, FRCP 100
Joseph Griffiths, FRCS 100
The late Mr. Walters 101

NOTES AND NEWS

British Association 101
Needs and Benefits 101
National War Formulary 101
New Health Service and Pharmacists 102
University of London 102
University of Durham 102
Recruitment of B1 Officers 89
Royal Society of Medicine 102
Royal College of Surgeons 102
Ella Sachs Plotz Foundation 98
Civil Defence Awards 102
Grant to London Voluntary Hospitals 102
Association of Industrial Medical Officers 102
Volunteers for Relief Work 92
Medico-Legal Society 102

Births, Marriages, and Deaths ... 101

SECOND EDITION *SHORTLY AVAILABLE*

INTRODUCTION TO

DISEASES OF THE CHEST

By

JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.)

Assistant Physician and Demonstrator of Practical Medicine, St. Bartholomew's Hospital; Physician, Royal Chest Hospital Consulting Physician, Royal National Sanatorium, Bournemouth

HODDER & STOUGHTON LTD. 20, WARWICK SQUARE, E.C.4

"Gospel of fatness"

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

"A well-regulated diet serves to prevent over-fatigue. In all cases of 'nerves', fat seems to be one of the most important nutritive constituents of the food. With the war-time restricted diet, the preaching of a 'gospel of fatness' may seem unintelligent, but, after all, you can buy more fat fish, herrings, cod, etc., these days — *and you can purchase cod liver oil.*"

The doctor who gave that easily-followed advice in a recent newspaper article has helped to lighten the inevitable load on medical and health services this winter. The public will have no difficulty in obtaining SevenSeaS in liquid form.

That many people already appreciate the nutritive value of cod liver oil is proved by the increasing demand for SevenSeaS and the response to the Ministry of Food's free distribution. But many still regard it as medicine, rather than as food. It is they whom we hope to help to better health this winter by preaching this same 'gospel of fatness' in our advertising.

We hope that our efforts may result in your having fewer 'vaguely ill' patients, and so more time to attend to those who badly need your help.

STANDARD OIL: Vitamin A 20,000 I.U.; Vitamin D 2,500 I.U. per ounce. CONCENTRATED: Vitamin A 60,000 I.U.; Vitamin D 6,000 I.U. per ounce.

Issued by

BRITISH COD LIVER OIL PRODUCERS (HULL) LTD.
ST. ANDREW'S DOCK, HULL

Makers of

SevenSeaS

BOTTLED VEGETABLES FOR BABIES

—*ready strained*

CARROTS
SPINACH
PRUNES
} Steam-cooked: vacuum-packed

ALSO BONE AND VEGETABLE BROTH

BRAND'S vegetables, specially grown and picked at their prime, are superior to home-prepared vegetables.

Steam-cooking in vacuum, and vacuum-packing, tend to conserve the vitamins. A special sieving process ensures that no particle of irritant fibre remains.

Busy war-time mothers will welcome these new Baby Foods which relieve them of a very tedious job. The name of Brand & Co. Ltd. is a further recommendation.

BRAND'S BABY FOODS

7½d a jar

PREPARED BY THE MAKERS OF BRAND'S ESSENCE

There is no variation of diameter throughout the entire length of a nylon suture, nor in the uniformity of one filament with another. Mechanical precision ensures this, whether in the smallest diameter of .005" or in the largest of .019". Whenever nylon sutures are used, you can be certain that each succeeding suture will be an exact counterpart of the first. Besides being strong, smooth and supple, they are water-resistant and will remain uninjured by water or steam at the temperature normally used for sterilising. A pattern card can be obtained from your usual Medical Supply House.

ICI

IMPERIAL CHEMICAL INDUSTRIES LTD.
LONDON, S.W.1

P.N.17

H. K. LEWIS & Co. Ltd.

A SHORT PRACTICE OF SURGERY
By **HAMILTON BAILEY**, F.R.C.S., and **R. J. McNEILL LOVE**, M.S., F.R.C.S. Sixth Edition. 922 Illustrations. Demy 8vo. **37s. 6d.** net; postage 9d. [Reprint 1944.

HUMAN HISTOLOGY
A Guide for Medical Students
By **E. R. A. COOPER**, M.D., M.Sc. Foreword by F. WOOD JONES. With 237 Illustrations. Demy 8vo. **16s.** net; postage 7d.

VENEREAL DISEASES
By **E. T. BURKE**, *D.S.O.*, M.B., Ch.B. With 133 Text Illustrations and 6 Coloured Plates. Demy 8vo. **35s.** net; postage 9d.

A GUIDE TO HUMAN PARASITOLOGY
For Medical Practitioners
By **D. B. BLACKLOCK**, M.D. Edin., D.P.H. Lond., D.T.M. Liverp., and **T. SOUTHWELL**, D.Sc., Ph.D. Fourth Edition. With 2 Coloured Plates and 122 Text Illustrations. Royal 8vo. **15s.** net; postage 9d.

ANÆSTHETICS AFLOAT
By **Surgeon Commander RONALD WOOLMER**, R.N.V.R., B.A., B.M., B.Ch. Oxon., D.A. With an Introduction by Surgeon Captain H. D. DRENNAN, R.N., *D.S.O.* With Illustrations. Crown 8vo. **6s.** net; postage 4d.

BIOLOGY STAINING SCHEDULES
For First-Year Students
By **R. R. FOWELL**, M.Sc. Second Edition. Paper Covers. **2s.** net; postage 2d.

COMMON SKIN DISEASES
By **A. C. ROXBURGH**, M.D., F.R.C.P. Seventh Edition. With 8 Coloured Plates and 179 Illustrations in the Text. Demy 8vo. **18s.** net; postage 7d.

MINOR SURGERY
By **R. J. McNEILL LOVE**, M.S., F.R.C.S. Second Edition. With numerous Illustrations. **15s.** net; postage 6d.

By the Same Author

A GUIDE TO THE SURGICAL PAPER
With Questions and Answers
Second Edition. F'cap 8vo. **6s.** net; postage 3d.

ELEMENTARY PATHOLOGICAL HISTOLOGY
By **W. G. BARNARD**, F.R.C.P. Second Edition. With 181 Illustrations (8 Coloured). Crown 4to. **10s.** net; postage 7d.

THE CLINICAL EXAMINATION OF THE NERVOUS SYSTEM
By **G. H. MONRAD-KROHN**, M.D. Oslo, F.R.C.P. Lond., M.R.C.S. Eng. Seventh Edition. 111 Illustrations. Crown 8vo. **9s.** net; postage 7d.

SURGICAL NOTE-TAKING
A Booklet for Surgical Dressers and Clerks Commencing Clinical Studies
By **G. F. M. SAINT**, M.D., M.S. Durh., F.R.C.S. Eng. Third Edition. Crown 8vo. **3s.** net; postage 2d.

Lewis's Publications are obtainable of all Booksellers

London: H. K. LEWIS & Co. Ltd., 136 Gower Street, W.C.1
Telephone: EUSton 4282 (5 lines)

Important Baillière Books

★ New Edition ★

BETHEL SOLOMONS'
A HANDBOOK OF GYNÆCOLOGY
4th Ed. Pp. xiv + 352 250 Illus.
Designed both to assist students and as a reference book for practitioners 25s.

GUTHRIE-SMITH'S Rehabilitation
Re-education and Remedial Exercises
Pp. viii + 424. 273 Illus.
"Deserves to be read by every surgeon and physician." —*British Medical Journal* 25s.

KERR'S Operative Obstetrics
4th Ed. Pp. xii + 847. 338 Illus.
Deals primarily with the diagnosis and treatment of the complications of labour. 45s.

FORBUS' Reaction to Injury:
Pathology for Students of Disease
Pp. viii + 797. 532 Illus.
"Will occupy an important place in pathological literature." —*British Medical Journal* 50s.

ZIEVE'S Aids to Orthopædic Surgery and Fractures
(*In the Students' Aids Series*) 2nd Ed. Pp. iv + 270.
"Amazingly complete . . . can be heartily recommended." —*University of Leeds Med. Mag.* 6s.

LAKE'S The Foot
3rd Ed. Pp. viii + 432. 136 Illus.
"An excellent introduction to the study of the foot in health and disease."—*Journal of R.N.M.S.* 15s.

WHITLA'S Dictionary of Treatment Revised by J. H. Burn, M.D.
Pp. viii + 1285.
"A thoroughly modern reference book on treatment." —*Lancet* 31s. 6d.

GRANT'S Atlas of Anatomy
Pp. xii + 390. 460 Illus.
"An excellent pictorial record of human anatomy." —*British Medical Journal* 55s.

HALER'S Aids to Clinical Pathology (*In the Students' Aids Series*)
Pp. viii + 358. 21 Illus.
"We consider this to be one of the best in the series." —*Medical World* 6s.

BAILLIÈRE, TINDALL & COX, 7–8, Henrietta Street, London, W.C.2

Supplementary feeding in pregnancy

The value of the inclusion of Marmite in the diets of pregnant women is well recognised. Confirmatory evidence of its somewhat special use in this connection is given in a paper in which the author concludes that "supplementary feeding with Marmite, or a similar yeast extract, during pregnancy results in a statistically significant reduction in the stillbirth-rate and neonatal mortality." (*Lancet*, 1944, i, 208.)

MARMITE

yeast extract

contains vitamins of the B_2 complex

RIBOFLAVIN (vitamin B_2) - - 1·5 mg. per oz.
NIACIN (nicotinic acid) - - 16·5 mg. per oz.

Jars: 1-oz., 6d.; 2-oz., 10d.; 4-oz., 1s. 6d.; 8-oz., 2s. 6d.; 16-oz., 4s. 6d.

THE MARMITE FOOD EXTRACT CO. LTD.
35 Seething Lane, LONDON, E.C.3

451

30/-

THE SCOTTISH WIDOWS' FUND has declared, for the 5 years, 1939-43, a reversionary bonus of 30/- per cent. per annum compound.

Add distinction to your bundle of life policies by including at least one bearing "the hall mark of sterling quality in mutual life assurance."

Write to the Secretary

SCOTTISH WIDOWS' FUND

Head Office:
9, St. Andrew Square,
Edinburgh, 2

Inclement Weather and Muscular Aches and Pains

Bengué's Balsam produces rapid relief of pain in Myalgia and in painful joint affections. Through local decongestive action and systemic salicylate influence it quickly allays joint and muscle discomfort. Swelling subsides and easier movement becomes possible, resolution is promoted and restoration of action is hastened.

The systemic action of Bengué's Balsam, produced by cutaneous absorption of Methyl Salicylate, never leads to the gastric irritations so often encountered in oral administration of salicylates.

A generous sample will be sent upon request

INFLUENZA
•
MYALGIA
•
RHEUMATOID CONDITIONS
•
LUMBAGO

BENGUÉ'S BALSAM

BENGUÉ & CO. LTD., MOUNT PLEASANT, ALPERTON, WEMBLEY, MDX.

Globin Insulin A.B.

Globin insulin (with zinc) is a preparation intermediate in its intensity and duration of action between soluble insulin and protamine zinc insulin. Globin Insulin (with zinc) A.B. is a clear, stable, aqueous solution of insulin in combination with globin, a simple protein obtained from the chromogen of red blood corpuscles. It is available in the following packings :—

5 c.c. vials (40 units per c.c.) 2/4

5 c.c. vials (80 units per c.c.) 4/5

Further information will be supplied on request.

Joint licensees and manufacturers:
ALLEN & HANBURYS LTD. THE BRITISH DRUG HOUSES LTD.

A B
TRADE MARK

A HYPERBARIC SPINAL ANÆSTHETIC

Many references have been published in American journals on the use of p-butyl-aminobenzoyl dimethyl amino ethanol (Amethocaine Hydrochloride) as a Spinal Anæsthetic, especially when used in the form of a hyperbaric solution. This combination has rapidly become one of the most popular anæsthetic agents, and to quote the "New England Journal of Medicine," Dec. 7th, 1939, provides unequalled anæsthesia for routine use.

Spinal "D" is a hyperbaric solution of Amethocaine Hydrochloride and is indicated for spinal anæsthesia in operations below the level of the diaphragm.

LITERATURE ON APPLICATION TO

DUNCAN, FLOCKHART & CO.
EDINBURGH LONDON

AN ADVANCE IN ŒSTROGENIC THERAPY

'Ovendosyn'

Each tablet contains Stilbœstrol 0·5 mg. and Calcium Phosphate 290 mg.

Menopausal Disorders. For a number of years 'Ovendosyn' has proved highly successful in controlling the physical and psychic manifestations of the menopause by providing a complete replacement therapy with the minimum of side-effects. This treatment with relatively small doses of stilbœstrol aims at allowing a gradual adjustment to the new endocrine level and not at artifically postponing the menopause.

'Ovendosyn' *Forte*

Each tablet contains Stilbœstrol 5·0 mg. and Calcium Phosphate 325 mg.

Malignant Disease. Recent research has fully established the value of œstrogenic treatment in carcinoma of the prostate and suggests its possible advantages in inoperable breast cancer. The higher stilbœstrol dosage often required in such cases can be conveniently administered by 'Ovendosyn' *Forte*. The calcium content reduces unpleasant reactions and should also help considerably in the regression of bony metastases.

Samples of tablets of either strength gladly sent to physicians on request

MENLEY & JAMES LTD., 123 COLDHARBOUR LANE, LONDON, S.E.5

OOF1

Prompt relief from pain IN PEPTIC ULCER

Prompt and sustained relief from the pain of peptic ulcer is one of the striking features of medication with 'Aludrox.'

The medication of choice in peptic ulcer

'ALUDROX'
BRAND REG.
AMPHOTERIC GEL

- PROMPT RELIEF OF PAIN
- RAPID HEALING OF ULCER
- FEWER RECURRENCES
- LESS NEED FOR RESTRICTED DIET
- NO ALKALOSIS

JOHN WYETH & BROTHER LIMITED. (Sole distributors for PETROLAGAR LABORATORIES LTD.) Clifton House, Euston Rd. London, N.W.1.

MERSALYL B.D.H.

The Standard Mercurial Diuretic

There is no more satisfactory means of inducing diuresis than by the use of mersalyl administered by the appropriate route and with such collateral treatment as may be desirable.

For most patients, slow intravenous injection is suitable but if there is any suspicion of liver damage or a low level of plasma protein, the intramuscular route may be desirable. As an alternative, Mersalyl B.D.H. may be given, intravenously, mixed in the syringe with Dehydrocholin B.D.H. This has the effect of inhibiting the production of toxic effects and of enhancing the diuretic effects, so that a smaller dose of Mersalyl B.D.H. may give an adequate response.

Premedication with ammonium chloride may be undertaken in all cases and the effect of an injection of Mersalyl B.D.H. may be further enhanced and prolonged by giving tablets or suppositories of Mersalyl B.D.H.

Details of dosage and other relevant information on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

Telephone: Clerkenwell 3000 Telegrams: Tetradome Telex London

Mrsl/E/20

GLANOID

PITUITARY (POSTERIOR LOBE) EXTRACT B.P. 1932

STANDARDISED ON THE GUINEA PIG UTERUS FOR ITS OXYTOCIC POTENCY. AVAILABLE IN 0·5 AND 1·0 C.C. AMPOULES, 10 UNITS PER C.C.

In the preparation of "GLANOID" PITUITARY (POSTERIOR LOBE) EXTRACT, painstaking care is taken to ensure pre-measured potency, accurate standardisation, highest purity, and complete sterility. The Armour Laboratories' tremendous supply of raw material, the quality of its facilities, have made ARMOUR stand for "excellence" in medicinals of animal origin.

Write for Literature to

Telephone: MONARCH 8044

THE Armour Laboratories

THORNTON HOUSE, FINSBURY SQUARE, LONDON, E.C.2

Telegrams: "ARMOSATA-PHONE" LONDON

PHENIODOL B. D. H.

A Cholecystographic Agent for Oral Use

Pheniodol, when given orally, is concentrated in the gall-bladder as effectively as is iodophthalein (T.I.P.) when given intravenously. A most convenient method of administering Pheniodol is in the form of Pheniodol Meal B.D.H. a specially-prepared powder readily miscible with water to form a smooth suspension which is easily taken by the patient.

By the use of Pheniodol Meal B.D.H. the incidence of nausea, vomiting and diarrhœa is reduced to a minimum.

Details of dosage and other relevant information will be gladly supplied on request.

THE BRITISH DRUG HOUSES LTD. LONDON N.1

X-Ray/E/23a

ELIXIR VITAMINÆ

Made by a modern homogenising process, Elixir Vitaminæ contains Vitamins A and D, Glycerophosphates, Organic Iron and Calcium, together with traces of Copper and Manganese.

These valuable constituents are distributed with absolute uniformity in a deliciously flavoured syrup containing Glucose. In convalescence and debilitated conditions, particularly after illness or operations, Elixir Vitaminæ provides the vitamins and minerals necessary for a rapid recovery. Its pleasant flavour makes it of great value where the appetite is small and it is specially suitable for children.

Packed in 20-oz., 40-oz. and 90-oz. bottles.

one of HEWLETT'S preparations

C. J. HEWLETT & SON, LTD., MANUFACTURING CHEMISTS, LONDON, E.C.2.

CORVOTONE

CARDIOVASCULAR STIMULANT

Corvotone (Nikethamide B.P.) is of proved value in all forms of shock and collapse. It increases the depth and frequency of respiration, raises the blood pressure and increases the coronary blood supply. The regular administration of Corvotone by mouth is recommended in neuro-circulatory asthenia in the later stages of pneumonia and as a prophylactic to assist in the prevention of cardiac failure.

CORVOTONE-ORAL		CORVOTONE FOR INJECTION	
Bottle of ½ fl. oz.	3/7½	Box of 3 x 2 c.c. ampoules ...	2/3½
Bottle of 100 c.c.	18/4	Box of 6 x 2 c.c. ampoules ...	4/1
		Box of 3 x 5 c.c. ampoules ...	5/1

Prices net

Further information gladly sent on request to the

MEDICAL DEPARTMENT

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

B0356-62

TRADE MARK **'Sodium Amytal'** BRAND

SODIUM ISO-AMYL ETHYL BARBITURATE

in Psychiatric Conditions

Many years of clinical experience have proved the value of 'Sodium Amytal' in disturbed mental conditions. Patients may receive effective doses with relative safety. Psychotherapy may be successfully employed in the "twilight" state which is induced. This method is recommended for treatment of hospitalized cases but may be employed in private homes with adequate nursing supervision. Permanently good results may be obtained.

References: Jour. of Mental Science, Jan. 1941; Jour. of Mental Science, Jan. 1942; Practitioner, Sept. 1942.

ELI LILLY AND COMPANY LIMITED

BASINGSTOKE AND LONDON

GLOBIN INSULIN
(with Zinc)
—BOOTS—

Globin Insulin (with Zinc)—Boots has a rapidity of onset and duration of effect intermediate between Insulin and Protamine Zinc Insulin. Its action lasts about twenty-four hours and with a slight modification of diet most cases of diabetes mellitus can be controlled by one injection a day.

Globin Insulin (with Zinc)—Boots is available as a clear aqueous solution of insulin combined with globin, with the addition of a trace of zinc chloride to the mixture.

40 Units per c.c.
5 c.c. rubber-capped vials - - 2/4

80 Units per c.c.
5 c.c. rubber-capped vials - - 4/5

Prices net

Further information gladly sent on request to the
MEDICAL DEPARTMENT
BOOTS PURE DRUG CO. LTD NOTTINGHAM

B*T-43

KEEPING HIM ON THE JOB—

Hæmorrhoids rank comparatively high among the causes of lost "man hours". To-day, more than ever, this should be a matter of concern to physicians.

Whenever non-surgical treatment is indicated, Anusol may be used with the knowledge that it will afford the kind of relief likely to keep the patient on his job. By their emollient properties Anusol Suppositories reduce inflammation, alleviate pain and check the bleeding. They contain no narcotic or anæsthetic to give the patient a false sense of security.

William R. Warner & Co. Ltd., 150-158, Kensington High Street, London, W.8.
(*Wartime Address*)

ANUSOL
Haemorrhoidal Suppositories

23

'NEPTAL'

TRADE MARK BRAND

mercuramide with theophylline

A new packing of this mercurial diuretic has recently been introduced. It is a more dilute solution for administration by the intravenous route only and is supplied in ampoules of 5 and 10 c.c., these being equivalent to the 1 and 2 c.c. ampoules formerly employed for the purpose. The latter continue to be supplied for use by the intramuscular route and the strength of this solution remains the same, namely, 9.2 per cent. w/v mercuramide and 5 per cent. w/v theophylline.

For maintaining patients oedema-free after a course of injections or in the more severe cases for prolonging the interval between injections 'Neptal' is administered orally, for which purpose tablets are available containing mercuramide 0.16 gramme and theophylline 0.08 gramme in each. Owing to the convenience and effectiveness of the oral route rectal administration by means of suppositories is obsolescent.

SUPPLIES:

'Neptal' intramuscular solution is supplied in 1 and 2 c.c. ampoules and intravenous solution in 5 and 10 c.c. ampoules, all being available in boxes of 6 and 25 ampoules. The tablets are issued in bottles of 12, 25 and 100.

Manufactured by

MAY & BAKER LTD.

Distributors

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

7099

OF PROVEN MERIT

"WANDER" BRAND

Malt Extract & Cod Liver Oil

THE therapeutic qualities and effectiveness of "Wander" Brand Malt Extract and Cod Liver Oil have been demonstrated by practical experience over many years. It is a preparation of outstanding pharmaceutical excellence.

The cod liver oil used is the best obtainable and the malt extract is specially prepared by the manufacturers, A. Wander Ltd., who are probably the world's largest producers of medicinal malt extract, upon the manufacture of which there are no greater authorities.

The makers have also specialised for many years in the combination of malt extract and cod liver oil, and the proportions of these two ingredients which are combined in "Wander" Brand are those most generally required by the medical profession.

The cod liver oil is incorporated with the malt extract by special processes. This results in a preparation pre-eminently acceptable to the patient both in appearance and taste.

Strict control by the "Wander" Laboratories ensures that the high reputation for quality which this preparation enjoys is fully maintained. Thus "Wander" Brand Malt Extract and Cod Liver Oil is a product on which the physician can rely confidently, knowing that it cannot be surpassed.

When prescribing, specify "Wander" Brand

A. WANDER LTD.
5 and 7 Albert Hall Mansions, London, S.W.7
Laboratories, Works and Farms: King's Langley, Herts

M308

ANTITOXIC AND ANTIBACTERIAL SERA

Diphtheria antitoxin

Tetanus antitoxin

Gas gangrene antitoxin (perfringens)

Gas gangrene antitoxin (polyvalent)

Tetanus-gas gangrene antitoxin

Anti-dysentery serum (polyvalent)

Streptococcus (scarlatina) antitoxin

Anti-streptococcus serum (polyvalent)

Exhaustive tests ensure that all these products satisfy high standards of purity

Manufactured and tested in accordance with the Therapeutic Substances Regulations, 1931-1939 under U.K. Manufacturing Licence 18.

For further particulars apply to—

Liverpool: Home Medical Department, Speke, Liverpool, 19

London: Home Medical Department, Bartholomew Close, E.C.1

MEDICAL EVANS PRODUCTS

Made in England by

EVANS SONS LESCHER & WEBB LTD.

M39
13

PNEUMONIA

THE addition of EDWENIL to whatever other means you employ in treating pneumonia and influenza is bound favourably to influence the course of the illness. There will be a prompt reduction in temperature, indicative of the rapid mobilisation of the natural antibacterial defences. As a result, the duration of the illness and subsequent convalescence is greatly curtailed.

EDWENIL is immediately available and, being completely free from toxic or allergic elements, permits of early and aggressive treatment.

Supplement Chemotherapy with EDWENIL

EDWENIL

NON-TOXIC • NON-ALLERGIC • REACTION-FREE

A deproteinised flocculus obtained by fractional extraction from a mixture of normal horse serum and an extract of beef muscle, suspended in 0·5 per cent. phenolised saline

Boxes of 3 and 12 × 2 cc. ampoules
Rubber-capped phials of 12½ cc., 25 cc., and 50 cc.

Manufactured in the laboratories of—

ENDOCRINES-SPICER LTD • WATFORD • HERTS

MANAGEMENT OF HOSPITALS IN PEACE AND WAR *

SOMERVILLE HASTINGS, MS LOND., FRCS
CHAIRMAN OF THE LONDON COUNTY COUNCIL

I DESIRE to bring before you some observations on the administration of hospitals in peace and war. I need hardly remind you that I shall be speaking only for myself and not for any organisation with which I happen to be associated. Moreover, I am not proposing that all these suggestions are immediately practicable. They are, I believe, ideals to be aimed at, rather than proposals to be carried out everywhere at once.

THE GENERAL FRAMEWORK

I want to speak of hospitals as hospitals—that is, living dynamic organisations—and am not proposing to discuss how they should be planned and built, or whether they should be municipal or voluntary.

Nevertheless, the time has long passed when a hospital can be looked upon as an isolated unit, for no single hospital can economically provide for every type of patient who may require treatment. It is generally agreed, I think, that the best medical and surgical work is usually carried out in the wards of a large general hospital. Some would suggest that in association with such a hospital there might be pavilions for infectious disease and tuberculosis, though I do not regard this myself as desirable. Neither do I feel that declared mental disease is best treated in connexion with a general hospital, although at least one of a group of two or three general hospitals should have wards or a separate block for the observation of early acute cases of mental diseases, as well as for the treatment of those not requiring certification, because in both there is often some physical illness that needs attention at the same time. This also has the advantage of readily accessible psychiatric advice for any patient in the general wards who needs it. A good many cases of chronic illness, after thorough investigation in a general hospital, can be usefully transferred to hospitals where they can stay longer. Institutions for younger patients, such as those with chronic heart trouble or requiring rehabilitation treatment, are best situated in the country; but old people, who are not likely to recover, will be much happier in hospitals near their homes.

With the exception therefore of fevers, tuberculosis, declared mental disease, and some chronic cases, most patients needing hospital care are best dealt with within the wards of a large general hospital. For every unit of population of about 100,000 one such hospital of approximately 800 beds will be necessary. There is therefore, in my view, no place in the ideal system for the small cottage hospital, for the patients of such hospitals and their friends are certain to urge upon their doctors the treatment of conditions for which they have neither the experience nor the facilities. The continued education of the general practitioner is much better secured by associating him closely with the work of the large general hospital and by revision courses. Neither is there, in my view, any place for what are generally described as special hospitals; for you cannot cut the body up into little bits and treat each part separately.

It is not suggested, however, that every general hospital should have special departments for the in-patient treatment of every disease. There should be medical, surgical, gynæcological, and perhaps maternity wards in every hospital, but for specialties such as eyes, skins, ear, nose and throat, hospitals should be grouped and wards provided for such cases in one of a group of three or four. For specialties less often in demand, such as neurosurgery, chest surgery, thyroid surgery, plastic surgery, and radiotherapy, a single department for a group of eight or ten hospitals may be sufficient. It is of course assumed that officers in charge of a special department will attend and give advice at any hospital of the group, although for the treatment of ordinary cases beds will be provided in only one hospital.

Children present a peculiar problem, forming as they do a special type of patient, subject however to diseases of every kind and of every part of the body. There should be a pædiatrician attached to every maternity department. In addition it may very often be advantageous to have children's wards in one hospital of a group of three or four, when geographical conditions make this possible. Probably, however, the best arrangement of all is a hospital for children only, with its special departments for diseases of different regions, and a hospital school attached to it for long-stay cases in the country.

If the foregoing principles are accepted, even in general terms, it will be agreed that what is necessary is not a number of independent hospitals but a hospital system such as, for instance, that of the joint authority contemplated by the Government's white-paper on the health services. Such a body will have many and important functions. It will have to determine the conditions of service of the staff of all its hospitals, and costing arrangements, as well as the type of case to be admitted to each hospital, and this last may have to be altered at short notice in case of epidemic or emergency.

This then is the general framework into which all hospitals will have to fit. We can now pass to the more detailed examination of each individual hospital.

MANAGEMENT COMMITTEES

Every hospital should have its own committee of management. In the past this committee has been in complete control in the case of the voluntary hospitals, each of which has usually acted as an isolated unit. If, however, there is to be a hospital system all the really important decisions will have to be made by the central coördinating body. To what extent then is there a place for a committee of management of each individual hospital? Would it not be better to group hospitals for this purpose or abolish local committees entirely? One obvious advantage from the point of view of the hospital staff would be the avoidance of the duplication of authority—there would be one committee only to satisfy instead of two. Nevertheless in my opinion every hospital ought to have its own committee of management, and I would delegate to such a committee all decisions that can safely be left in its hands, remembering that variation is essential for evolutionary progress.

One of the most valuable assets of the voluntary system has been that through committees of all sorts, and other means, people of a district have been induced to take an interest in their local hospital and feel that it is their own. Even if in the future hospitals should be mainly or entirely supported by public funds, I hope these committees will continue and be extended to all hospitals. It is good for a hospital to be in intimate touch with the public that uses it. It is good for the staff to realise that their labours are known and appreciated. However complete the public provisions may appear to be, there will always be funds to be provided, personal services rendered, and experiments in social service carried out, by voluntary effort. In addition to committees of management, most hospitals will therefore benefit by samaritan, aftercare, entertainments, library, and other committees. To the committee of management should be allocated the appointment and discipline of the junior staff, the carrying out of cleansing and minor repairs up to an agreed sum, and other matters. Its main duty will be, however, to make recommendations to the central committee which will have to consider these not only as they affect the particular hospital but also the service as a whole.

STAFF COMMITTEES

To what extent should the staff of a hospital be in a position to influence its administration? I am of opinion that every member of the staff—medical, nursing, and lay—should not only realise the importance of the work he or she is doing, but should also feel assured that any suggestions he may desire to make for the more efficient running of the hospital will receive appropriate consideration. It must be made clear from the very first that if staff committees are formed, they must be advisory and not executive, and deal solely with means of improvement of the services provided by the hospital. Discipline, rates of pay, and conditions of service must be entirely outside their terms of reference, being dealt with by national committees, trade-unions, or similar organisations.

* Lecture delivered in London on Oct. 13, 1944, under the Chadwick Trust.

The medical superintendent, where one exists, and all members of the senior and intermediate medical staff, should be members of the medical staff committee. The junior staff should also appoint representatives. The committee should elect its own chairman. It has been suggested that if there is a medical superintendent he should ipso facto be chairman of the committee. This appears to me undesirable and liable to limit freedom of discussion and recommendation. The terms of reference of the committee should be wide and should include such matters as accommodation, staffing, teaching, research, and equipment. Certain of the recommendations of the medical staff committee will be within the jurisdiction of the hospital superintendent, and if he is in agreement they can be carried out at once. Otherwise they will come before the hospital committee with other matters within the terms of reference of that committee. Other recommendations will go to the central coördinating body either direct or (perhaps better) through a central medical staff advisory committee formed of representatives of the medical staff committees of all the hospitals in the unit.

The nursing staff committee should have a similar constitution. It should consist of representatives elected by student nurses of the first, second, third, and fourth year, of staff nurses, ward, and administrative sisters, and also assistant and male nurses, if employed. Each of these categories should meet independently to discuss problems and elect representatives. It is probably best that in most hospitals the matron should not be a member of this committee, but recommendations made to the hospital management committee would be seen by the matron and she would no doubt in many cases report to that committee that she had already taken the necessary action. A central nurses' advisory committee formed of representatives of the local committees to deal with questions of general application and to report direct to the central coördinating body might also be desirable.

In at least one hospital at the commencement of the present war the medical superintendent called together representatives of every grade of staff and asked for suggestions for the running of the hospital during the difficult times ahead, and this committee has been meeting at intervals ever since. Joint production and efficiency committees have proved of value in industry and ought to be tried out in hospitals. They would have nothing to do with staff matters, but would make it possible for every employee of the hospital to make suggestions for its more efficient running. These staff advisory committees should be formed of representatives of every grade of staff and make recommendations to the hospital committee.

CLINICAL UNITS

Every general hospital will require at least three departments—medical, surgical, and gynæcological. The medical will usually be the largest, for it will include the chronic sick. Each department, general or special, should be staffed on the "clinical unit" system—that is to say, there should be a physician or surgeon of consultant status, who would be in complete clinical charge, with an assistant, one or two registrars, and a variable number of junior and senior house-officers. In the case of the special departments the clinical unit would be centred in one general hospital, but the doctor in charge or his assistant would attend at other hospitals as required, and also, it is hoped, at health centres and to see patients in their own homes.

THE SUPERINTENDENT—MEDICAL OR LAY?

Perhaps it may be useful at this stage to consider the much discussed question of whether the superintendent or director of a hospital should be a doctor or a layman. At Guy's Hospital there is a medical superintendent and a lay clerk to the governors, each responsible for matters within his own sphere, and the system apparently works well. But in most hospitals it is found to be more convenient to have one person responsible for the general administration of the whole institution, leaving the clinical care of patients to the doctors in charge. Should this superintendent be a doctor or a trained layman?

In the case of hospitals for infectious and mental diseases and tuberculosis the decision should be easy. The cases are all of one type, and, the sphere being limited, it is possible for a single individual to become an expert in all maladies dealt with in that particular hospital. The chief clinical officer will therefore naturally become the head of the hospital. In the case of infectious disease, especially, he may well also become the clinical consultant of his district.

In the past, the officer in charge of a municipal hospital has been a doctor, but in a voluntary hospital it is usual to appoint as secretary-superintendent, a layman. It is clear that no single doctor can have sufficient knowledge and experience to deserve a place as the head of each of the clinical units into which a hospital is divided, and accordingly it has been suggested that one of the heads of the clinical units should act as medical superintendent and that the individual selected should be changed every few years. This suggestion has in my opinion nothing to recommend it. A good clinician is but rarely a good administrator; nor would one expect the head of a clinical unit who was really keen on his work to be willing to leave it even for a few hours daily to undertake the administrative control of a large hospital. Nevertheless, there is much to be said for the superintendent of a hospital being a qualified doctor. A man with medical experience is in a much better position to deal with complaints of patients and their friends, as well as to solve the administrative problems which a committee may present to him. In matters of discipline and the allocation of duties among the medical staff the medical administrator has a distinct advantage. Moreover, it is clear that in the future hospitals will function as a system and not as a series of isolated units. This must imply not only some central control, but also at times rapid change of use of wards or even whole hospitals. A doctor will be in the best position to carry out instructions of this nature.

The work of a medical superintendent is both important and absorbing, but if such an individual is to maintain his keenness and breadth of outlook it is probably desirable that a portion of his time should be devoted to other duties, as for instance the medical care of the resident staff or some branch of medicine or surgery in which he is interested. I have seen the work of medical superintendents who are also pseudo-specialists, and it has not in every case been such as to enhance the respect due to them from those under their administrative charge. A better proposal is as follows. It seems pretty clear that some form of National Health Service is on the way. If, as has been suggested, the country is divided up into units of 100,000 people with wherever possible a large general hospital in each, it might be desirable for the medical superintendent of the hospital to act administratively as supervisor also, of the consultant services of this unit and also of the health centres or other general-practitioner services.

When a hospital stands as an isolated unit its superintendent, be he medical or lay, will have to advise the committee of management, which is in complete control, and his responsibility will be great. When, however, a hospital is one of a group or system, all major issues will be decided by the central coördinating body, and the superintendent will be able to consult the permanent staff of this body in case of doubt. In either case the superintendent should have an intimate knowledge of the law as it affects hospitals, accidents, and employees, as well as mental and infectious disease and public health generally. Although there will usually be an engineer to advise on problems of maintenance of buildings, heating, lighting, and so on, and a steward to deal with accountancy and supplies, the superintendent should have considerable knowledge of these also. It seems desirable therefore that all those aspiring to an administrative staff appointment or to become the superintendent of a hospital should be encouraged to take a diploma in hospital administration. It may also be said generally that an officer who has had some experience of central administrative staff work will make a better hospital superintendent.

FULL-TIME OR PART-TIME STAFF?

In my opinion the best results are likely to be obtained if the medical staff of a hospital are full-time officers. I am well aware that the consultant, who visits patients of the well-to-do in their homes, is supposed to derive

from this a breadth of outlook unobtainable by any other means. I unhesitatingly agree that for a full understanding of its natural history, disease must be studied as it occurs in the homes and work-places of the people. But surely the consultant who, as proposed in the white-paper, visits, when necessary, any person of whatever class, however lowly, in his home will have a better knowledge of ætiology than one who, as at present, sees no more than a favoured few. By visiting patients in their homes, by outpatient as well as inpatient work, by constant contact with colleagues in every branch of practice and perhaps most of all by research work, the full-time hospital doctor should find no difficulty in maintaining interest and keeping himself up to date. Visits to other clinics in this country and abroad should be encouraged, as well as attendance at national and international conferences.

The hospital doctor, whether a full-time officer or not, should live within a short distance of the hospital in which his patients are warded. The treatment of disease, both medical and surgical, is a continuous process in which the highest skill available may be required at any time. There can of course be no objection to the consultant or specialist travelling some distance from his home to give an opinion, but the surgeon who attends a cottage or other hospital at weekly or fortnightly intervals and undertakes routine operative treatment at these visits is in my opinion asking for trouble.

But while all doctors should live near the hospital in which their patients are housed, comparatively few ought of necessity to live in. In the past, I think, many hospitals, especially municipal, have asked too much of their medical staff. Of course there must always be some doctors on the premises to deal with such sudden emergencies as severe bleeding or suffocation. There must also be highly skilled personnel on call. Fortunately, however, there are very few cases in which serious harm will result from waiting the 10 or 15 minutes that it should take such assistance to reach the hospital. The doctor who, living near the hospital, spends most of his leisure in his home, will usually be of greater value than the resident who spends all his available free time in visiting his wife or friends some distance away.

PROFESSIONAL AND POLITICAL FREEDOM

A great deal has been written regarding the need for complete professional, intellectual, and political freedom for members of the medical profession. If, as seems likely, some 90–100% of the doctors will become engaged in the public service either whole or part time, to grant anything less would be to disenfranchise the profession. And this must apply not only to the doctors but to other health workers as well. All must therefore have the right to speak or write anything they desire. All must also have the right to stand for Parliament. In the past a teacher employed in the State schools has been allowed to become a member either of any local authority or of any but the one that employs him. To apply any such restriction under the set-up envisaged by the white-paper with a joint hospital authority covering a large area, would be to exclude doctors and other health workers from sitting as elected representatives of an area in which their local knowledge could be of particular value. Might it not be sufficient if the usual rule were applied, and such representatives asked to withdraw whenever their financial interests were directly or indirectly affected by the matter under consideration?

WORK AND PROMOTION

A few other points in connexion with medical staffing may be mentioned. It takes many years of training and experience, gained unfortunately by failure as well as success, to make an efficient doctor. Surely everything should be done to make the most effective use of experience gained at so great a cost. To expect therefore such an individual to write letters and keep notes of cases, when this can be done both more quickly and efficiently by a shorthand-typist, is wasteful in the extreme. The provision of such assistance will be found to increase the output of work of many hospital doctors considerably.

One of the weaknesses of the voluntary hospital system is fixity of staff, many of whom, like myself, have remained attached to the same hospital continuously since their student days. It is rarely that a doctor under 40 should remain for more than 5 years at one hospital, and a medical superintendent, whatever his age, ought to change his hospital fairly frequently. Some little experience has convinced me that, with very few exceptions, a medical superintendent has made his greatest contribution to any one hospital within 10 years of his appointment to it.

And now a word about promotion. It is human nature to prefer the known to the unknown, and the committee of management of a municipal no less than of a voluntary hospital generally exhibits a strong tendency to appoint the man or woman on the spot rather than a stronger candidate from outside. The only way to avoid this danger is by having a large unit of hospital administration. Junior or house officers might well be appointed by the committee of management of a hospital in consultation with the medical superintendent and head of the clinical unit concerned. All above this rank should be elected by the central coördinating body or a committee appointed by it. But while it is essential that the final selection should be made by this body, the short-listing, if not indeed the placing of those selected in order of merit, should be carried out by a body of experts. For clinical appointments the short-listing committee should consist of the heads of clinical units in the branch of practice concerned, together with representatives of the central staff: for administrative appointments there should be representatives of the medical superintendents and central staff. It is to be hoped that before long all hospitals of any size will take their place in a scheme for undergraduate or postgraduate education. In that case university representatives should be added to the short-listing committee for all senior appointments which may involve teaching.

STUDENTS

At this point I would like to interpolate a few words about the value of students to a hospital. All who have engaged in clinical teaching will realise how useful to the teacher is the impact of young, vigorous, and critical minds. But that is by no means all. Students bring a breath of fresh air from the outside world which is felt by all—nurses, patients, everyone. Where students are widely distributed, as they must be for efficient clinical instruction, few patients will object to their presence for they realise that fresh facts are often brought to light by the discussion of their cases. The presence of students, either undergraduate or post-graduate, adds to the prestige of a hospital and improves both the status and efficiency of its staff.

NURSES

I shall not venture more than a few general observations on the administration and conditions of service of the hospital nursing staff. The student nurse must be regarded much more as a student and much less as a source of cheap labour than at present. With this in view she must be given a chance to gain experience in the nursing of as many different types of patient as may be required, even if this necessitates a change of hospital. She should work a 48-hour week or less, and these hours should include not only all lectures and classes but also an hour a day spent compulsorily in library or classroom for study or the writing up of lecture notes. The only satisfactory way to study a clinical profession is to read up details of the work on which one is actually engaged, and every student nurse must have ample opportunity for doing this.

Unless the student nurse's home is reasonably near the hospital she should reside within its curtilage during her student days. She should be housed in a hostel presided over by a warden, who should be responsible to the medical superintendent for the order of the hostel and well-being of the nurses. As much freedom should be granted as is consistent with the important duties that the student nurse has to perform, and while the matron of the hospital should maintain strict discipline as long as the nurse is on duty or in the classroom, her jurisdiction should abruptly cease directly the nurse leaves the hospital.

There is a good deal to be said for making the residence in hospital of all State-registered nurses and sisters

optional. Given a comfortable bed-sitting-room and facilities for entertaining visitors there are many nurses who prefer to live in a hostel with friends and colleagues; and especially is this the case during difficult times like the present. On the other hand there are some who feel that the complete freedom that they desire is impossible under these conditions. There is no doubt that the right thing is to leave the matter to be determined by the individual nurse or sister, but this uncertainty of demand gives rise to serious difficulties on the part of those responsible for the provision of hostel accommodation. The nurse who marries and sets up a home will of course live out. She should be required to give up nursing only temporarily before and after childbirth.

PRIVACY FOR PATIENTS

People vary greatly as regards their reactions to their fellow beings. Some, perhaps because they have lived under more or less overcrowded conditions all their lives, cannot bear to be left alone even in sickness. Others, when ill, desire solitude beyond all else. It would not be very expensive to change all hospital wards into curtained cubicles, and I am hopeful that this may be achieved within a few years of the end of the war. The provision of curtains, together with the occasional change of the position of patients in the wards, should go far to satisfy the wishes of most. But in addition, for those who are acutely ill or noisy or in any way likely to disturb others, a supply of single-bedded side wards is essential. Surgical cases are especially liable to be restless during the first night after operation. It is useful therefore to have a section of a surgical ward partitioned off by a glass screen. To this section new cases are admitted, and in it they remain until the day after operation, when they should be transferred to the other part of the ward.

Should wards or rooms for paying patients be provided in hospitals and should payment be for privacy and extra amenities only? Or should there be in addition fees to the doctors for services rendered? I would answer both questions in the negative. However hospitals may be paid for in the future, I feel that there must be no demand for any immediate financial contribution which could act as a deterrent and tend to prevent anyone from taking advantage of the hospital services that he needs. But if hospital treatment is free to all, no-one will be willing to pay for it unless he expects to receive superior amenities or greater care in treatment, as in practice he certainly will. This must necessarily imply that the services provided for those who do not pay this extra sum are not of the best. It is infinitely better, I think, to try to raise the standard for all than to provide an improved service for a favoured few, selected solely because of their relative affluence. Small wards, curtained cubicles, and a sufficiency of side wards should be capable of giving privacy to all who desire or need it.

There is one relatively small matter in which both voluntary and municipal hospitals are too often sadly lacking. It is in provision for the comfort of those visiting seriously ill relatives. A room that can be warmed, with comfortable easy chairs and couches, should be provided and provision made for a simple meal at night if necessary. It is not likely that such amenities would be often abused.

WAR

Comparing the present with the last great war, there have been two definite improvements. First, the Emergency Medical Scheme, through which all hospitals of any size, both municipal and voluntary, have had to obey the instructions of the Ministry of Health, has brought some order into our chaotic hospital system. Secondly, Service cases have been admitted to the same hospital as civilians and treated by the civilian doctors in them to a much greater extent than in the last war. This classification of patients according to the nature of their affections rather than the type of clothing that they wear is certainly a step in the right direction. But it must go further and be extended to the wards of hospitals, for every type of disease requires its own special type of nursing and treatment. It is manifestly absurd to have in the same hospital different wards for civilians, sailors, soldiers, and airmen with a few cases of the several types of disease in each. It should be easy to so assimilate the regulations governing the feeding and behaviour of each of these classes that neither becomes adversely affected by the presence of the other. All cases of allied affection could then be treated in the same wards with consequent benefit to all concerned.

In conclusion, I wish to express my thanks to Sir Allen Daley, MOH for the County of London, for much helpful advice, both in the preparation of this lecture, and also during the 10 years of administrative experience that made it possible.

BACTERIOLYTIC ACTION OF PENICILLIN

E. W. TODD, MD CAMB., DPH *
Inoculation Department, St. Mary's Hospital, London; Serum Institute, Wellcome Foundation

Fleming's first observation on penicillin was the lysis of colonies of *Staphylococcus aureus* on an agar plate at the circumference of a colony of *Penicillium notatum*. It was therefore the observation of bacteriolysis which led to the discovery of penicillin.

Many interesting facts in Fleming's original (1929) article on penicillin seem to have been overlooked, and not the least interesting is his observation that staphylococci in broth cultures containing penicillin multiply during the first few hours of incubation and that the organisms are killed and lysed after this initial period of multiplication. Rantz and Kirby (1944), using photoelectric turbidimetric methods, found that the action of penicillin on staphylococci in broth could be divided into several phases. At first the staphylococci multiplied in penicillin-broth at the same rate as in plain broth; then multiplication slowed down and ceased. Finally progressive bacteriolysis was observed. Himmelweit (1944) found that young broth cultures of staphylococci are lysed by penicillin much more quickly than older cultures.

METHODS

Cultures, opaque enough for bacteriolysis to be observed, were made in tryptic digest broth; the time of incubation varying from 1 to 5 hours according to the rate of growth of the organism. Turbidity standards were prepared by adding formalin in a dilution of 1 in 100 to varying quantities of the organisms in broth made up to a total volume of 1 c.cm. A suitable dilution of penicillin in a volume of 0·1 c.cm. was added to another portion of the same culture so that the final total volume was 1 c.cm. The tubes were then incubated in a water-bath at 37° C. Any increase or decrease in turbidity of cultures was noted at short intervals by comparison with the formolised standards. Young cultures which had been stored overnight at 0° C lysed as quickly as freshly prepared cultures, and this method was often adopted because it allowed more time during the day for observation of progressive bacteriolysis.

PNEUMOCOCCUS

A 3-hour culture of *Pneumococcus* type I was mixed with 1 unit of penicillin. The turbidity of the culture increased during the first hour of incubation, it then returned to its original level, and within 2 hours progressive lysis had commenced. After 4½ hours' incubation the culture was completely lysed and a loopful of the clear fluid developed one colony when spread on a blood-agar plate previously treated with penicillinase. A control plate of the culture without penicillin developed innumerable colonies.

The same experiment with *Pneumococcus* type II gave a similar result. The opacity at first increased, progressive lysis commenced in 1½ hours and was complete in 4½ hours. A penicillinase blood-agar plate was sown with a loopful of the lysed culture after 4½ hours' incubation and it remained sterile.

Pneumococcus type III lysed more slowly. Increased turbidity persisted for 2 hours; lysis commenced in 3 hours and was complete in 6 hours.

Rapid lysis of pneumococci by penicillin is dependent on the age of the culture. A 16-hour culture of *Pneumococcus* type II was mixed with 1 unit of penicillin. During the first 10 hours of incubation there was no increase or decrease of turbidity. After 24 hours a trace of lysis was observed and this was not increased after 48 hours' incubation. The lysis was however greater

* Seconded for the duration of the war from the London County Council.

than that of a control culture without penicillin. In a parallel experiment, done at the same time with a 4½-hour culture of the same strain, lysis was complete within 4 hours.

Active multiplication of organisms appears to favour rapid bacteriolysis by penicillin. This is again demonstrated in the following experiment. A 4½-hour culture of *Pneumococcus* type III was divided into two parts. One part was centrifuged down, washed once in saline and made up to its original volume with saline. When mixed with 1 unit of penicillin, as described in previous experiments, the broth culture at first increased in turbidity; lysis commenced in 6 hours and was complete in less than 20 hours. On the other hand, there was no multiplication in the saline suspension and the amount

TABLE I—EFFECT OF NORMAL RABBIT SERUM ON THE RATE OF GROWTH OF PNEUMOCOCCUS TYPE III AND ON THE RATE OF ITS LYSIS BY PENICILLIN

Hours of incubation	0·8 c.cm. of culture + 0·1 c.cm. of saline		0·8 c.cm. of culture + 0·1 unit pen.		0·8 c.cm. of culture + 1 unit pen.	
	+0·1 c.cm. serum	+ 0·1 c.cm. saline	+ 0·1 c.cm. serum	+ 0·1 c.cm. saline	+ 0·1 c.cm. serum	+ 0·1 c.cm. saline
0	0	0	0	0	0	0
1	1	1	1	1	+	1
2	3	2	+	1	++	1
3	4	3	++	1	+++	1
4	4	3	+++	1	++++	0
5	4	3	+++	1	++++	0
6	4	3	++++	0	++++	+
7	4	3	++++	0	++++	+
8	4	3	++++	0	++++	++
24	4	3	++++	+++	++++	++++

0 = original turbidity. 1, 2, 3, 4 = degrees of increased turbidity.
+, ++ = partial lysis. +++ = almost complete lysis.
++++ = complete lysis.
Bacteriostatic dose of penicillin for this culture, 0·016 unit per c.cm.

of lysis after 20 hours was not much greater with penicillin than in a control saline suspension.

Since lysis appears to depend on active multiplication of the organisms an experiment was done to see whether more rapid multiplication caused by the addition of normal rabbit serum would also lead to more rapid lysis. Table I shows the result of this experiment. The addition of serum to the culture greatly increased both the rate of multiplication and the rate of lysis. The serum culture containing 1 unit of penicillin lysed too rapidly for any preliminary increase in turbidity to be

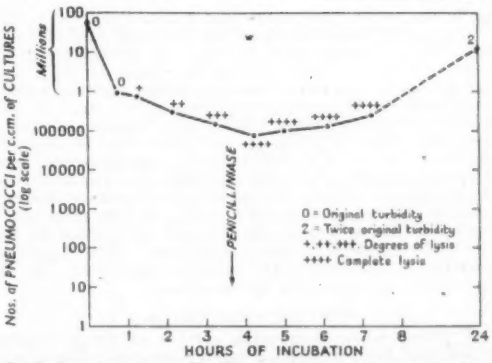


Fig. 3—Pneumococcus type III. Effect of adding penicillinase to a culture almost completely lysed by penicillin.

observed. Lysis commenced within an hour, compared with 6 hours in the corresponding culture without serum In all the other cultures containing penicillin an increase in turbidity preceded lysis.

In order to correlate the number of living pneumococci with the opacity of the cultures undergoing multiplication or lysis, the last experiment was repeated with a 3-hour culture of *Pneumococcus* type III. The quantities of culture, penicillin, serum, and saline were the same, but the tubes containing 0·1 unit of penicillin were omitted. Suitable dilutions of the cultures were plated in poured blood-agar at intervals for colony counts. Fig. 1 gives the result of this experiment. The curves represent the increase or decrease in pneumococcal population and the turbidity is recorded at each point on the curves. The serum-culture increased in 3 hours from 20 million to 430 million organisms per c.cm.; the serum-penicillin culture was completely lysed in 3 hours, as judged by the absence of any turbidity, and the count had fallen from 20 million to 9 thousand organisms per c.cm. On the other hand, in the cultures without any serum, both multiplication and lysis were relatively slow. In 3 hours the plain broth culture increased to 80 million organisms per c.cm. and with penicillin lysis was just beginning with a count of 280 thousand organisms per c.cm. After 24 hours' incubation the counts were as follows: (1) serum-broth 144 million per c.cm.; (2) plain broth 10 million per c.cm.; (3) plain penicillin-broth sterile; (4) serum-penicillin broth sterile.

Fig. 2 gives the result of a similar experiment in which 0·5% of glucose was used to accelerate growth instead of serum. Glucose caused a similar though less pronounced acceleration of both multiplication and lysis.

It will be seen from figs. 1 and 2 that the correlation between turbidity and colony counts is imperfect. An increase in turbidity often accompanied a falling count of living pneumococci. It seems probable that multiplication, death, and lysis may all occur independently at the same time in a culture containing penicillin. The experiments show, however, that progressive lysis and ultimate sterilisation of the culture by penicillin are accelerated if conditions are supplied which normally cause accelerated multiplication.

Fig. 3 shows that neutralisation of the penicillin in a culture which is almost completely lysed stops the lytic process and allows the organisms to multiply. In this experiment 0·8 c.cm. of a 3-hour culture of *Pneumococcus* type III was mixed with 0·1 c.cm. of normal rabbit serum and 0·1 c.cm. of penicillin containing 1 unit. After

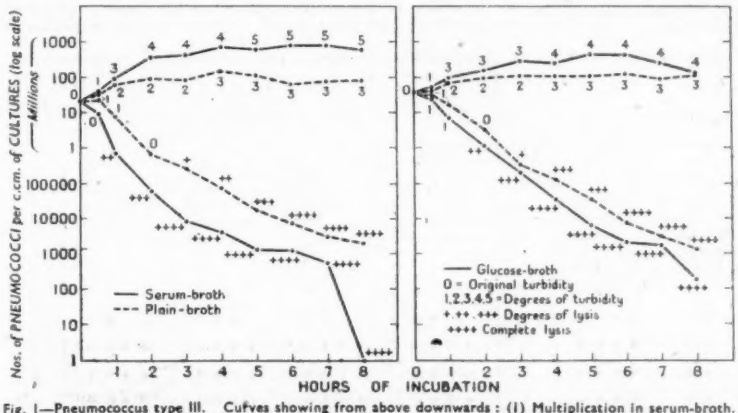


Fig. 1—Pneumococcus type III. Cufves showing from above downwards: (1) Multiplication in serum-broth. (2) Multiplication in plain broth. (3) Lysis in plain penicillin-broth. (4) Lysis in penicillin-serum-broth. Concentration of penicillin 1 unit per c.cm.

Fig. 2—Pneumococcus type III. Curves showing from above downwards: (1) Multiplication in glucose-broth; (2) Multiplication in plain broth. (3) Lysis in plain penicillin-broth. (4) Lysis in penicillin-glucose-broth. Concentration of penicillin 1 unit per c.cm.

3½ hours, when the count had fallen from 54 million to about 100 thousand organisms per c.cm. and turbidity had almost disappeared, 3 units† of penicillinase were added to the culture. Thirty-five minutes later lysis was complete, as judged by turbidity, and the culture contained 80 thousand organisms per c.cm. A slow multiplication of pneumococci then began, and during the eighth hour, although no turbidity could be detected, the count had risen to 260 thousand organisms per c.cm., After overnight incubation turbidity had risen to twice the original level with a count of only 12 million pneumococci per c.cm., presumably owing to the presence of dead and living pneumococci which had failed to lyse after the penicillin was neutralised. The continued presence of penicillin is therefore necessary for the completion of lysis and sterilisation.

STREPTOCOCCUS VIRIDANS

A young actively growing culture of *Strep. viridans* which had been incubated for 3 hours was mixed with 1 unit of penicillin in a total volume of 1 c.cm. Turbidity increased during the first hour; progressive lysis then commenced and was complete in 3 hours.

A second strain of *Strep. viridans*, which was more resistant to lysis by penicillin was treated in the same way with 1 unit of penicillin; an additional tube of the culture was tested containing 1 unit of penicillin and 10% normal rabbit serum to accelerate lysis. The culture without serum showed increased turbidity during the first 3 hours and after 24 hours it had lysed to about half the original turbidity. The serum-culture increased in turbidity for 1½ hours; lysis then commenced and was complete in 24 hours.

A third strain of *Strep. viridans* which was still more resistant to lysis by penicillin was treated in the same way. The culture without serum showed increased turbidity for 7 hours and after 24 hours it had returned to its original turbidity. The serum-culture at first increased in turbidity; lysis commenced after 3½ hours and the culture was about half lysed after 24 hours' incubation.

HÆMOLYTIC STREPTOCOCCI

Lysis of hæmolytic streptococci by penicillin was not obtained with any of the numerous strains tested unless serum was added to the actively growing young cultures at the same time as the penicillin. Three-hour cultures of three different strains of group A hæmolytic streptococci were mixed with 100, 10, 1, and 0·1 units of penicillin and 10% normal rabbit serum. After 19 hours' incubation one strain showed definite partial lysis and one showed doubtful lysis. After incubation for another 24 hours all the strains showed definite partial lysis. There appeared to be little difference in the degrees of lysis caused by the different doses of penicillin.

Hæmolytic streptococci of groups C (human origin) and G also underwent partial slow lysis by penicillin in serum-broth. One of the group C strains was completely lysed on the sixth day.

STAPHYLOCOCCUS

Young cultures of staphylococci in the stage of active multiplication are rapidly lysed by penicillin. With older cultures, which have been incubated for 16 or 24 hours before adding the penicillin, lysis is much slower and may not be complete until incubation has been continued for 3 or 4 days.

As shown by Fleming (1929), staphylococci multiply in the presence of penicillin before the commencement of lysis. As in the case of pneumococci rapid initial multiplication is followed by an increased rate of lysis. This is demonstrated in fig. 4, which records the turbidity and lysis of a 3-hour culture of staphylococci treated with different doses of penicillin. The bacteriostatic dose of penicillin for this strain is 0·06 unit per c.cm. When 0·025 unit of penicillin was added to the culture, in a total volume of 1 c.cm., rapid multiplication was followed by rapid lysis, which did not however proceed

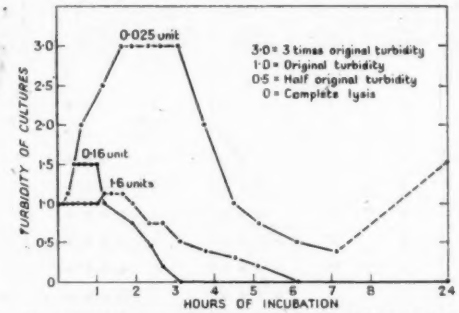


Fig. 4—Staphylococcus, strain H. Increase of turbidity and lysis with various concentrations of penicillin. Bacteriostatic dose of penicillin for this strain = 0·06 unit per c.cm.

to completion and was followed by a second period of multiplication. With 0·16 unit of penicillin a short period of rapid multiplication was followed by the most rapid lysis, which was complete in 3 hours. With a ten-fold increase in the dose of penicillin to 1·6 units per c.cm. multiplication was delayed and much less pronounced, while the subsequent lysis was not complete until the culture had been incubated for 6 hours. This seems to show that staphylococci conform to the general rule that the rate of lysis by penicillin depends on the actual or potential rate of multiplication of the organisms.

This is demonstrated in table II, which shows the times of lysis of young cultures of two strains of staphylococcus. The strain H did not increase in turbidity with 100, 10, or 1 units of penicillin, and with all these doses lysis occurred at the same rate. With 0·1 unit of penicillin

† One unit of penicillinase being the quantity required to neutralise one unit of penicillin when titrated for bacteriostasis of staphylococcus H on a 20% range of dilutions.

TABLE II—MULTIPLICATION AND LYSIS OF TWO STRAINS OF STAPHYLOCOCCUS WITH VARIOUS DOSES OF PENICILLIN

Hours of incubation	Strain H					Strain K 1				
	Units of penicillin per c.cm.					Units of penicillin per c.cm.				
	100	10	1·0	0·1	0·01	100	10	1·0	0·1	0·01
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	1	0	1	1	1	1
2	0	0	0	+	1	1	1	1	1	1
3	0	0	0	++	1	1	1	0	1	1
4	+	+	+	+++	1	±	+	+	0	1
5	++	++	++	++++	1	++	++	+++	++	1
6	++	++	++	++++	1	++++	++++	++++	++++	1
7	++	++	++	++++	1	++++	++++	++++	++++	1
8	++	++	++	++++	1	++++	++++	++++	++++	1
24	++++	++++	++++	++++	1	++++	++++	++++	++++	1

0 = original turbidity. 1 = increased turbidity. ±, +, ++ = degrees of lysis. +++ = almost complete lysis. ++++ = complete lysis. Bacteriostatic doses of penicillin for strain H, 0·06 unit per c.cm.; for strain K 1, 0·06 unit per c.cm.

TABLE III

MULTIPLICATION AND LYSIS OF STAPHYLOCOCCUS STRAIN H WITH VARIOUS DOSES OF PENICILLIN IN BROTH AND IN SALINE

Hours of incubation	Washed cocci in broth						Washed cocci in saline						
	Units of penicillin per c.cm						Units of penicillin per c.cm.						
	1·0	0·5	0·2	0·1	0·05	0·02	1·0	0·5	0·2	0·1	0·05	0·02	Nil
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	3	4	5	6	7	0	0	0	0	0	0	0
2	1	1	1	1	3	4	0	0	0	0	0	0	0
3	1	1	0	+	2	3	0	0	0	0	0	0	0
4	0	0	++	++++	0	3	0	0	0	0	0	0	0
5	0	+	++++	++++	+	2	0	0	0	0	0	0	0
6	+	++	++++	++++	++	2	0	0	0	0	0	0	0
7	+++	+++	++++	++++	+++	2	0	0	0	0	0	0	0
24	++++	++++	++++	++++	1	1	++	++	++	++	++	++	++

0 = original turbidity. 1, 2, 3 &c. = degrees of increased turbidity. +, ++, +++ = degrees of lysis. ++++ = complete lysis.

initial multiplication was followed by more rapid lysis. On the other hand, strain K 1 multiplied in all the dilutions of penicillin and there was comparatively little difference in the rate of lysis by the various doses of penicillin.

The small optimal lytic dose noted for strain H (table II) has also been noted with some other strains of staphylococci. Among four coagulase-positive and two coagulase-negative strains tested, three lysed first with small doses and three with large doses, there being one coagulase-negative strain in each group.

Table III shows the effect of various doses of penicillin on a 3-hour culture of staphylococcus H which was divided into two parts, washed once in saline and resuspended (*a*) in broth, (*b*) in saline. In this experiment multiplication in broth occurred with all the doses of penicillin including 1 unit. The most rapid multiplication and lysis were observed in the tube containing the smallest dose of penicillin, which was greater than the bacteriostatic dose. When the cocci were suspended in saline there was no multiplication and no lysis apart from the lysis which always occurs when young staphylococci are incubated in saline.

It is evident that rapid multiplication favours rapid lysis by penicillin, and the following experiment shows that staphylococci in the resting state can survive in large doses of penicillin.

A 24-hour culture of the strain H in 8–10 c.cm. of broth was mixed with 100 units of penicillin in 1 c.cm. of saline. After 6 days' incubation one loopful was subcultured into fresh broth and the subculture was again treated with 100 units of penicillin. This process was repeated five times and at the end of the experiment the treated staphylococci were no more resistant to bacteriostasis or lysis by penicillin than the original strain. It was found that after 8 days' incubation the culture still contained about 6 units per c.cm. of penicillin. The resting organisms had therefore been exposed to penicillin for 6 days on five separate occasions without sterilisation.

In a similar experiment with 1000 units of penicillin and a 24-hour culture of staphylococcus strain A it was found that the resting staphylococci survived and grew out when subcultured into broth containing penicillinase. Old cultures of pneumococci which are not actively dividing also survive in large doses of penicillin.

CLOSTRIDIUM WELCHII

Two strains of *Clostridium welchii*, S 107 and A 118, were tested for lysis by penicillin. Overnight cultures growing actively in Robertson's meat medium were subcultured into digest broth without meat, which was boiled and cooled to 37° C immediately before sowing. After 1½ hours' incubation the cultures, which were then actively multiplying and forming gas, were mixed with 100, 10, and 1 units of penicillin as previously described for aerobic organisms. Table IV shows that initial multiplication was followed by lysis which was almost complete with the larger doses of penicillin after 22 hours. A considerable increase in the rate of multiplication occurred when 0·5% glucose or 10% normal serum was added to the cultures, and under these conditions 10 units of penicillin caused complete lysis in less than 17 hours.

When sodium thioglycolate was used to produce anaerobiosis, and when the tubes were sealed with soft paraffin to exclude air, an increased rate of multiplication was accompanied by much more rapid lysis. With 10 units of penicillin per c.cm. a 2-hour culture of strain A 118 was completely lysed in 1 hour when 10% of serum and 1% of glucose were added to the culture; with 10% serum alone lysis was complete in 1½ hours and with 1% glucose alone in 2 hours. Similarly with 1 unit of penicillin per c.cm. the serum-glucose culture was completely lysed in 3 hours; the serum-culture was almost completely lysed in 6 hours and the glucose-culture was half lysed in 6 hours. Without any penicillin the upward displacement of soft paraffin seals by gas formation in 2 hours was as follows: (1) serum-glucose culture 15 mm.; (2) serum-culture 6 mm.; (3) glucose-culture 3 mm. The rate of lysis therefore ran parallel with the rate of gas formation.

TABLE IV—MULTIPLICATION AND LYSIS OF TWO STRAINS OF *Cl. welchii* WITH VARIOUS DOSES OF PENICILLIN

Hours of incubation	Strain S 107				Strain A 118			
	Units of penicillin per c.cm.				Units of penicillin per c.cm.			
	100	10	1	Nil	100	10	1	Nil
0	0	0	0	0	0	0	0	0
1	1	1	2	3	1	1	2	2
2	1	1	3	4	1	1	2	3
3	+	0	2	4	+	0	2	4
4	++	+	2	4	+	+	2	4
5	+++	+	2	4	+	+	2	4
22	+++	+++	1	4	+++	+++	++	4

0 = original turbidity. 1, 2, 3 &c. = degrees of increased turbidity. +, ++ = degrees of lysis. +++ = almost complete lysis.

DISCUSSION

All the penicillin-sensitive organisms tested were susceptible to bacteriolysis by penicillin. On the other hand penicillin-insensitive organisms such as *Bacillus coli* and *Ps. pyocyanea* were not lysed by penicillin. The question arises whether the bacteriostatic action of penicillin is distinct and separate from the bacteriolytic action or whether they are different manifestations of one and the same process. There can be no doubt

that penicillin is capable of killing micro-organisms without lysis, and it seems probable that multiplication, death, and lysis may all occur independently at the same time in a culture containing penicillin. This is shown in fig. 2 where, during the first 2 hours of incubation, turbidity increased with a diminishing colony count, presumably owing to rapid multiplication accompanied by a still more rapid death-rate but without correspondingly rapid lysis. After this initial period progressive lysis and a steadily falling colony count proceeded to complete lysis and complete sterilisation.

When the potential rate of multiplication is increased by the addition of serum, as shown in table I and fig. 1, bacteriolysis begins within an hour without any preliminary increase of turbidity or other evidence of multiplication. It is however possible that in this case multiplication is not detectable because both the death-rate and the rate of lysis exceed the rate of multiplication.

Whether this is the correct explanation or not it seems to be a general rule that the rate of bacteriolysis by penicillin depends on the actual or potential rate of multiplication of the organisms. Hobby, Meyer, and Chaffee (1942) showed that multiplication of organisms is necessary for the action of penicillin. Bigger (1944) found that staphylococci which are not actively dividing survive in penicillin while the actively multiplying organisms are killed. This is confirmed by experiments quoted in this paper. It would appear that bacteriostasis, bactericidal action, and bacteriolysis may be different stages of a single process proceeding in that order. Undoubtedly bacteriolysis is one method by which penicillin can sterilise a culture, but it is not necessarily the only method. There is at present no evidence whether one or more factors are involved in the bacteriostatic, bactericidal, and bacteriolytic effects of penicillin since the method of its action is unknown.

It is interesting to note (see table III and fig. 4) that a dose of penicillin which is considerably smaller than the amount required to produce bacteriostasis in the usual laboratory tests has a definite bacteriolytic action on staphylococci. This sequence of multiplication, lysis, and renewed multiplication in very dilute penicillin can also be demonstrated with pneumococci. If the same thing occurs in the human body, where unrestricted multiplication is prevented, bacteriolysis will continue after the blood level of penicillin has fallen below the amount required to produce bacteriostasis in ordinary laboratory tests.

It may be that the real reason why penicillin is so effective is the fact that young cultures in the stage of active multiplication are more susceptible to the bacteriolytic action of penicillin than older cultures. Todd (1927) and Hare (1931) showed that old cultures are killed or phagocyted by normal human blood, whereas young cultures are highly resistant to these normal mechanisms of blood clearance.

It is therefore fortunate that the organisms which are in such a state that they could readily invade the human body are in just the state when they are most susceptible to the bacteriolytic action of penicillin.

SUMMARY

Bacteriolysis by penicillin is dependent on the phase of growth of the organisms.

Bacteriolysis by penicillin has been observed with all the penicillin-sensitive organisms tested—*Pneumococcus* types I, II and III, *Strep. viridans*, hæmolytic streptococcus groups A, C, and G, staphylococcus, and *Cl. welchii*.

The most rapid lysis occurs with organisms at the maximal rate of multiplication.

This may be the real reason why penicillin is so effective in treatment.

I wish to thank Sir Alexander Fleming for his interest and assistance.

REFERENCES

Bigger, J. W. (1944) *Lancet*, ii, 497.
Fleming, A. (1929) *Brit. J. exp. Path.* **10**, 1.
Hare, R. (1931) *Ibid*, **12**, 261.
Himmelweit, F. (1944) Personal communication.
Hobby, G. L., Meyer, K., Chaffee, E. (1942) *Proc. Soc. exp. Biol., NY*, **50**, 281.
Rantz, L. A., Kirby, W. M. M. (1944) *J. Immunol.* **48**, 335.
Todd, E. W. (1927) *Brit. J. exp. Path.* **8**, 289.

PNEUMOCOCCAL LOBAR PNEUMONIA TREATED WITH SULPHAMEZATHINE

A FURTHER STUDY

W. A. RAMSAY
TD, M D GLASG.
MEDICAL SUPERINTENDENT

R. W. LUXTON
M D MANC., M R C P
CONSULTING PHYSICIAN

CRUMPSALL HOSPITAL, MANCHESTER

PAUL STEINER
M D VIENNA
DEPUTY MEDICAL SUPERINTENDENT, CRUMPSALL HOSPITAL

G. STEWART SMITH
M D MANC.
DIRECTOR OF PATHOLOGICAL SERVICES, MANCHESTER MUNICIPAL GENERAL HOSPITALS

THIS paper gives some further account of an investigation of which a first report was published 2 years ago (Macartney et al. 1942). An additional series of 287 cases of pneumococcal lobar pneumonia have been treated with 'Sulphamezathine' (formerly known as 'Sulphamethazine'), a heterocyclic sulphonamide compound closely allied to sulphadiazine, remarkable alike for its high water-solubility and its relative freedom from toxicity.

To this second series of cases the same diagnostic criteria were applied as formerly, namely: (1) a typical pneumonic history; (2) physical and X-ray signs of lung consolidation; (3) the isolation and where possible typing of a pneumococcus from the sputum. Blood was also taken for culture on the day of admission, and the procedure repeated when necessary. The usual dosage employed was 4 grammes, initially followed by 2 g. every 6 hours, a scheme which was found to be generally effective in maintaining an adequate blood-concentration and in bringing about a rapid improvement in the patient's condition. Nevertheless, when a patient was in poor condition it was deemed wise to give the drug every four hours for the first 24 hours to ensure a satisfactory blood-level. When there was a poor clinical response to the drug the sulphonamide blood-concentration was estimated and if it was below 5 mg. per 100 c.cm., the sodium salt was usually given intramuscularly until the clinical condition improved.

Many of the patients had been given sulphapyridine before admission to hospital, usually in so small doses as to have little effect on the course of the disease. Confusion would arise in these cases when the patient vomited during the first 24 hours after admission, but almost invariably this symptom disappeared without our discontinuing the treatment, indicating that sulphapyridine was the probable cause of the emesis.

Since our favourable preliminary report on sulphamezathine other papers describing its use in pneumonia have appeared. Peters and Easby (1943) found a case-fatality of just over 4% in 77 cases of pneumonia in adults and children. Morgan and Wylie-Smith (1943) made a comparative study of sulphapyridine, sulphadiazine and sulphamezathine in the treatment of lobar pneumonia. They confirmed the efficiency of sulphamezathine and its relative freedom from harmful side-effects; it was used in 68 cases without a death. Melton in 1944 had a case-fatality of 6·7% in 134 cases of lobar pneumonia and a rate of 11·1% in 179 cases of a sulphapyridine series; ill effects were slight though there was occasional leucopenia. Jennings and Patterson (1942) reported that the drug was well tolerated and effective in children.

The efficiency of the drug in curing pneumonia thus appears unquestionable and the rareness of toxic reactions has been confirmed by all who have published their results. Our cases comprised 200 males and 87 females. There were 24 deaths, giving a case-fatality of 8·4%. All deaths occurring within 24 hours of admission to hospital have been excluded as tending to obscure a true estimation of the value of the drug. Even so, the death-rate is slightly higher than in our first series (6·7% of 71 cases) though it cannot be considered unsatisfactory when the age-groups in table I are studied. It is then seen that of 24 deaths, 23 are in the 40-plus groups, and of these, 22 are in patients over 50. The unusually high proportion of patients in these later decades is almost certainly responsible for the slightly higher total mortality than in our first series and in the other series quoted (see table II). The average age of all patients on admission to hospital is at

TABLE I—RELATION OF AGE TO CASE-FATALITY

Age-group (yr.)	Cases	Deaths	Per cent.
16–39	123	1	0·8
40–49	61	1	1·7
50–59	45	9	20
60–69	48	10	20
over 70	10	3	30

present higher than formerly on account of home nursing difficulties, and many elderly patients are admitted desperately ill for lack of necessary attention.

In cases which do not respond quickly to the drug the value of estimating the sulphonamide blood concentration has been repeatedly proved. Fairly often, through failure in absorption or for other reasons, the blood-level was found to be low but was quickly corrected by the intramuscular injection of the sodium salt. It

TABLE II—COMPARISON OF AGE-INCIDENCE WITH OTHER REPORTS

—	Under 40 yr.	Deaths	Per cent.	Over 40 yr.	Deaths	Per cent.
Don et al.: Sulphapyridine ..	70	2	2·9	49	6	12·2
Macartney et al: Sulphamezathine ..	37	1	2·7	36	4	11·1
Morgan and Wylie-Smith: Mixed series	281	8	2·8	210	38	18·1
Present series	123	1	0·8	164	23	14·0

may be added, that during the recent influenza epidemic patients who were desperately ill when admitted were restored to comparative ease in a few hours by an immediate intravenous injection of 3 g. of the drug; the effect was impressive.

Owing to the difficulty in obtaining supplies of sera, pneumococcus typing could not be continued throughout

TABLE III—INCIDENCE OF PNEUMOCOCCUS TYPES

Type	No.	Type	No.	Type	No.	Type	No.
1	76 (26)	6	1	13	1	23	2
2	19 (3)	7	4	14	1	25	1
3	18 (3)	8	5	15	1	..	..
4	2 (1)	10	1	18	1	..	..
5	12 (7)	11	1	22	1	..	..

the investigation; but the result of 147 typings given in table II shows that, as in our previous observations, type 1 infection is still by far the commonest. It is interesting to note that in Glasgow type 2 infections are much more common than type 1 (Anderson 1944). A positive blood-culture was obtained in 44 patients (15·3%), of whom 9 died, a proportion which compares

TABLE IV—INCIDENCE OF COMPLICATIONS

	No.	Per cent.		No.	Per cent.
Serous effusion	11	3·8	Endocarditis ..	3	1·0
Empyema ..	3	1·0	Lung abscess ..	2	0·7
Pericarditis ..	4	1·4	Jaundice ..	2	0·7

favourably with our sulphapyridine incidence (Don et al. 1940) of 4 deaths in 16 bacteræmic cases. Generally speaking, these patients are severely infected, so it is advisable to boost the blood-level of the drug by parenteral administration, a measure which generally gave good results. The bacteræmic cases are included in table III.

Complications.—The incidence of complications in this series was remarkably low judged by clinical, radiological and post-mortem examinations. It is possible that a few serous effusions were missed owing to extensive underlying consolidation, but the figure is substantially correct for effusions giving rise to well-marked clinical and radiological signs. The significance of some of the complications in causing death is discussed later.

Toxicity.—Our experience with our first series in regard to toxicity is again borne out. A rash appeared on 6 patients; 7 complained of nausea and 11 vomited; there were 2 cases of drug fever and 2 of leucopenia. In no case did vomiting cause cessation of treatment. Both cases of leucopenia recovered quickly when the drug was discontinued. There were no renal complications and no cyanosis. There is thus ample proof that this drug is one of the least harmful of the sulphonamides and is well tolerated.

FATAL CASES

The efficiency of sulphonamide treatment in pneumococcal lobar pneumonia is such that special attention must be paid to the failures, in order to assess the factors which prevent recovery, more than one factor often being present. The deaths in the present series are 24, while in our previous series of 71 cases there were 5 deaths. It is convenient to study them together: they seem to fall into 6 groups.

1. *Inadequate drug concentration in the blood.*—This seems to have been the cause of death in 5 patients, and the following case illustrates the group:

CASE 1.—A man of 57, subject to chronic bronchitis, had a severe type 5 pneumonia affecting the whole of the left lung. Admitted on the 10th day, he died on the 14th, and during this time had 44 g. of sulphamezathine by mouth. Blood-levels on the 10th and 12th days were 1·1 and 3·9 mg. per 100 c.cm.; 3 g. of the drug was given intramuscularly on the 13th day, and the blood-level raised to 5·3 mg. per 100 c.cm., but this measure was both inadequate and too late.

The question whether the patient is actually maintaining an effective concentration of the drug needs careful consideration in every case. As a rule 24 hours must elapse before one can be reasonably sure of a satisfactory response to treatment, and the loss of this time may make all the difference to the final result. Whether low blood-levels are due to faulty absorption or excessive acetylation is not easy to prove in these critical cases, but it is certainly true that a low blood-level is usually accompanied by a relatively high concentration in the acetylated inactive form. Parenteral treatment is easy and safe, with due precautions, and is necessary in a definite proportion of cases. In the light of our experience, we feel that the drug should be given by injection as well as by mouth during the first 24 hours in all severely toxic cases and in all cases seen after the 7th day of disease, and that a blood estimation of the drug should be made daily until the clinical condition is clearly satisfactory. In addition, the amount of the drug in the blood should be estimated in any case which fails to show decided clinical improvement after 36 hours' treatment by mouth.

2. *Late heart-failure.*—Three patients died of myocardial failure more than 2 weeks after the pneumonic toxæmia had been overcome and the lung was resolving well. Two were men over 65, each with a severe infection and positive blood-culture, who nevertheless responded well to treatment. It seems advisable for elderly people with pneumonia to convalesce slowly, and for special attention to be given to the state of the heart.

3. *Pneumococcal endocarditis.*—Of the 24 deaths, 4 were due to pneumococcal endocarditis. For some years we have been impressed with the frequency and importance of this condition as a cause of death in pneumonia, and a clinical and pathological analysis of 20 cases was made recently by two of us (Luxton and Smith 1943). The clinical diagnosis is far from easy unless the possibility of endocarditis is borne in mind when pyrexia persists, even if other complications such as empyema or pericarditis are found. Petechiæ are few and usually terminal, the spleen is palpable in only 10%, and the cardiac signs may be very difficult to assess. Unless autopsy is performed in every fatal case of pneumonia, the true incidence and importance of pneumococcal endocarditis as a cause of death will continue to be underestimated.

It is not clear at what point in the course of acute pneumonia the endocardium becomes infected. In some it is probably early, in which case sulphonamide therapy would probably act as usual on the pneumonic process but would fail to check the developing threat to the endocardium. In others infection of the endocardium may have resulted from an empyema which acted as a reservoir for virulent pneumococci which were carried via the pulmonary veins to the left heart. The following is a typical case in this series.

CASE 2.—A man of 56 had acute pneumonia and was treated at home with sulphapyridine. A week before admission he had a rigor. When first seen, he had a right-sided empyema containing type 1 pneumococcal pus, with a positive blood-culture. His blood-pressure was then 115/70 mm. Hg. A week later an aortic diastolic bruit became audible, and the blood-pressure was 120/55 mm. Hg. The spleen was never palpable, and not until 4 days before death were petechiæ discovered, on the conjunctivæ only. Although there were no clinical signs of meningitis, the cerebrospinal fluid taken a week before death, though sterile, contained 225 polymorphonuclear cells per c.mm. Blood-culture was positive on 3 out of 4 occasions. Sulphamezathine, totalling 128 g., was given by mouth over 14 days, and a toxic rash developed 2 days before death. Autopsy revealed typical vegetations of pneumococcal endocarditis on the aortic cusps.

4. *Chronic bronchitis and bronchiectasis.*—These conditions are generally recognised as of serious prognostic importance in pneumonia. Of our 24 deaths, 13 were in patients described as "chronic bronchitic." Apart from the structural damage to the heart, lungs and respiratory mechanism resulting from chronic bronchitis, mixed infection is common. One such patient in this series had a type 2 pneumococcus, a Friedlander's bacillus and a *Staph. aureus* (coagulase-positive) in the lung, which was in a state of gangrene. Most of such patients were over 50 years of age, but the following illustrates the serious results of pneumonia complicating bronchiectasis in a man of 29.

CASE 3.—The patient was admitted on the 16th day of a pneumonic illness, and a radiogram showed an abscess in the left lower lobe. Great general improvement resulted from treatment with sulphamezathine by mouth and parenterally, high blood-levels being attained; 26 days after admission there was serious recurrence of infection in the right upper lobe. Autopsy revealed bilateral bronchiectasis in the lower lobes, interlobar empyema, and a typical recent pneumonia in the right upper lobe.

5. *Pneumonia complicated by chronic disease elsewhere.*—In 2 cases *chronic nephritis* was found clinically and at autopsy. Both had a severe type 1 infection, which responded well to sulphamezathine, but they died from uræmia, blood-urea levels being 211 and 163 mg. per 100 c.cm., shortly before death.

A man of 44 whose pneumonia responded well to sulphamezathine was found at autopsy to have a coarse portal cirrhosis and enlarged spleen.

6. *Pneumococcal toxæmia.*—Nine deaths were attributed to the direct effect of toxæmia, usually ending in peripheral circulatory failure. Six were men, three were women, all between the ages of 52 and 80, the average age being 68. Three had type 1 infection, three type 3, and one type 5. In four the blood-culture was positive. The actual extent of lung involvement seems significant, two lobes being involved in five of the cases. Satisfactory drug levels in the blood were attained in all, high levels (14–24 mg. per 100 c.cm.) being achieved in three, one of whom developed a toxic rash. Only three were admitted to hospital before the 7th day of disease, and the average day of death was the 14th, the limits being the 7th to the 21st. The delay in treatment seems therefore to be a significant factor. Autopsy was obtained in 5 cases, all showing grey hepatisation, and 2 had a breakdown of lung tissue with an acute abscess of the lung. It is certain that toxæmia from the pneumonia alone will cause death in spite of the maintenance of a high sulphonamide level in the blood, and this is especially true in the older patient. Abdominal symptoms, as a sign of toxæmia, may be of particular significance in acute pneumonia, as illustrated by 5 cases in this group. Tympanites is usually terminal, but may occur early in the disease. Hiccough is important as a toxic sign, quite apart from its seriousness as a symptom. In one case true paralytic ileus appears to have been the chief cause of death.

CASE 4.—A man of 52, admitted on the 8th day in a state of delirium and semiconsciousness, with type 5, pneumonia affecting the right lower lobe. He had had hiccough for 2 days. Sulphamezathine by mouth and parenterally produced striking improvement in 24 hours, but 3 days later constipation and tympanites developed and failed to respond to treatment. Grey hepatisation was found at autopsy, and paralytic ileus with flakes of fibrinous material on the intestinal wall.

SUMMARY AND CONCLUSIONS

Sulphamezathine has been used in the treatment of a further 287 cases of pneumococcal lobar pneumonia with a case-fatality of 8·4%.

Of the 24 patients who died, 23 were over 40, and of these 22 were over 50 years of age.

It is confirmed that the drug is relatively non-toxic, and that the number of complications is not high.

An analysis of the deaths in this and the previous series leads us to suggest the following points as an aid in reducing still further the mortality of lobar pneumonia.

Steps must be taken to ensure an adequate drug concentration in the blood in the first 24 hours in severely toxic cases and in those coming for treatment after the 7th day of the disease.

In older patients the heart condition should be assessed and adequate convalescence allowed.

Abdominal symptoms should be regarded as a sign of toxæmia and receive early treatment.

An undetected empyema may be one of the reasons for the development of pneumococcal endocarditis.

REFERENCES

Don, C. S. D., Luxton, R. W., Donald, H. R., Ramsay, W. A., Macartney, D. W., Smith, G. S., Adderley, C. H. (1940) *Lancet*, i, 311.
Jennings, P. A., Patterson, W. H. (1942) *Ibid*, ii, 308.
Luxton, R. W., Smith, G. S. (1943) *Quart. J. Med.* **45**, 61.
Macartney, D. W., Smith, G. S., Luxton, R. W., Ramsay, W. A., Goldman, J. (1942) *Lancet*, i, 639.
Melton, G. (1944) *Ibid*, i, 277.
Morgan, T. N., Wylie-Smith, R. (1943), *Ibid*, ii, 731.
Peters, B. A., Easby, M. L. (1943), *Brit. med. J.* ii, 230.
Anderson (1944) (personal communication).

SPREAD OF INFECTIVE HEPATITIS *

RAYMOND KIRK, MB NZ, MRCP
LIEUT.-COLONEL NZMC

THIS paper is based on an epidemiological study of infective hepatitis among New Zealand soldiers at Alamein in 1942.

OBSERVATIONS

In 1942 the 2nd New Zealand Division was together as a single unit in Syria and in the Western Desert until July 22. It had the normal incidence of jaundice among all units. From that date it was divided into three separate groups and the incidence of jaundice changed.

Group I.—Two brigades of front-line troops, stationed in the desert at Alamein. Involved in the epidemic.

Group II.—Medical, supply, and maintenance units stationed in the desert 10 miles to the rear. Not involved.

Group III.—One brigade of infantry which returned to base. Not involved.

For epidemiological studies the desert has the advantage that there is no additional population; many factors remain constant and equal among all troops in all areas. Group I were front-line units which went into the New Zealand box at Alamein at the end of July: 35–40 days later hepatitis broke out among them, and it lasted until 35–40 days after their withdrawal from the area; among 7500 men there were 1059 cases. Group II units were located 10 miles to the rear of the Alamein line, and among 3900 men there were only 78 cases.

The New Zealand box was at the southern extremity of the Alamein line. The rest of the line north to the sea was occupied by British and Indian troops who were not affected until later in the season but then had a severe epidemic. The epidemic was thus localised in an

* A paper containing these data was presented by the author at the 2nd MEF Medical Conference held at Cairo in 1943; and the epidemic is also analysed in a thesis presented for the degree of MD in the University of New Zealand.

area 5 miles square at the south of the Alamein line—a piece of barren desert, with no scrub or water or any natural feature to distinguish it from the rest of the Western Desert. As all units separated from the New Zealand Division on July 22 escaped the epidemic it was clear that the infection was introduced in this area.

At that time the one difference between the New Zealand site and the rest of the Alamein line was that it was recaptured ground. It had been occupied by Italians and Germans, and then fought over at the battle of Ruwyeisat Ridge, before being occupied by New Zealand troops; whereas the rest of the line, except in one case to be mentioned later, had been occupied and held by the British units then in possession. Within the area itself the incidence of hepatitis was greatest in the extreme south and least in the north.

INTERPRETATION

As the various possibilities were considered one was able to eliminate such factors as water, food, hardship, living conditions, and climate, these being similar among all units in the line. During previous years New Zealand soldiers had shown no special susceptibility to the infection; and any predisposing factors which may have altered susceptibility during the stay in Syria were shared by the units detached in July, which remained uninfected. It was noted that reinforcements and rested troops were involved equally with the rest.

It seemed unlikely that some unknown vector was responsible, for no insects other than flies could be recognised in this or any other area. Against spread by droplet were the following facts:

1. There was no special incidence of catarrhal infections.
2. The men of infected units lived in groups of three or four in the open and had little intercommunication.
3. Small individual groups did not show any special tendency to infect each other.
4. Field ambulances which ultimately handled all cases as they went to the rear areas had a very low incidence.
5. Visitors to the area were frequent and did not carry the infection back to their messes and units.
6. Congestion was much less in the front line, and there were no messes or tents; whereas 10 miles to the rear men lived in tents and ate in messes and yet had no epidemic.

Clearly the site was the key, and the New Zealand box contained the reservoir of infection. There must be a mode of spread by which the virus caused cases simultaneously among many small groups scattered through the area. As flies were prevalent in incredible numbers everywhere along the Alamein line and to a lesser extent to the rear, and as diarrhœa and dysentery were rife, flies were considered the most likely vectors. The reservoir of infection could only be in the affected area; and this differed, as we have seen, from all other parts of the line (except that occupied by the 9th Australian Division) in that it was recaptured ground, fought over and heavily and openly contaminated by enemy fæces and dead bodies inadequately buried. We knew from patrols and prisoners that for some time there had been an epidemic of hepatitis among enemy troops opposite the New Zealand box and that many jaundiced men were kept in the front line. In the area occupied by the Australians similar conditions existed and they had a considerable number of cases at the same time as we did.

It was therefore suggested that the infection was conveyed by flies, from bodies and fæces on the infected ground, to men who were unable to protect their food, mess-tins, mouths, or hands from the hordes which swarmed over everything. Once the epidemic was established the area was reinfected by the New Zealand troops themselves; for it was never possible to achieve very satisfactory sanitation. The unit which occupied the area after the New Zealand brigades were withdrawn had an epidemic at the end of the incubation period.

Reasons why the infection did not at the time involve units north were:

1. Indian troops, who (like the Maoris) possess a partial immunity, were between the New Zealand Division and British units to the north.
2. The prevailing wind was from north-west to south-east; so flies infected in the heavily contaminated Ruwyeisat Ridge area tended to travel south.

CONCLUSION

The observations here recorded made it evident that at Alamein in September–November, 1942, infective hepatitis was spread by flies carrying the infection from human excreta. From this it was concluded that the virus must be passed in the urine or fæces or both, and that epidemics in soldiers could be prevented by adequate sanitation. This conclusion was supported by the further observation that the disease does not spread in base hospitals, prisoners-of-war cages, or anywhere where sanitation is good and there is satisfactory control of flies.

I wish to thank the many officers and men of the 2 NZ Division who assisted me in collecting data, and the DMS, 2 NZEF, for permission to publish this paper.

SIGNIFICANCE OF MITES AND THEIR EGGS IN HUMAN FÆCES

SIR PHILIP MANSON-BAHR, CMG, DSO, M D CAMB., F R C P
CONSULTING PHYSICIAN TO THE COLONIAL OFFICE; SENIOR PHYSICIAN TO THE HOSPITAL FOR TROPICAL DISEASES, LONDON

W. J. MUGGLETON, F I M L T

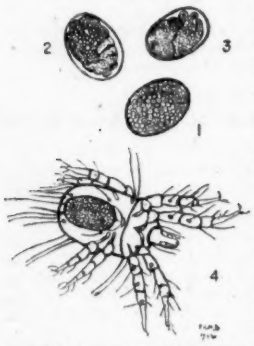
INVASION of the alimentary canal, and urinary and respiratory tracts, by tyroglyphid (and sometimes also tarsonemid) mites has been held responsible for enteritis, nocturnal enuresis, hæmaturia, and bronchitis. In the case of the alimentary canal the evidence up to 1929 has been reviewed by A. Hase.

Mites occur in foodstuffs of all kinds, but with the exception of the well-known "Altenburger" cheese, which is riddled with these acarines, their presence in these situations is both vicarious and unintentional. The most common in foodstuffs and fæces are cheese mites (*Tyroglyphus siro* and *T. longior*), next the meal mite (*Aleurobius farinæ*), and lastly the house mite *Glycophagus domesticus*, which is also often found in fruit and meat. But evidence of pathogenicity is by no means so clear. While some have thought that actual ingestion of myriads of these small creatures may cause intestinal disturbance by mechanical irritation or by the toxins they may produce, others consider that they are entirely harmless. Originally Küchenmeister and Zürn (1881) reported intestinal upsets after ingestion of "mite cheese," and Gedoelst (1911) held that *A. farinæ* produced intestinal catarrh and cutaneous eruptions, but Reh (1925) thought that large numbers of cheese mites could be eaten without harm. Others (Böhm 1920, Moniez 1894, Reye 1919, Martini 1925) agreed. Kunze (1924) and Hieronymi (1925) fed *A. farinæ* to a dog for four weeks without effect. Graf Vitzthum (1925) thought that various allergic cutaneous manifestations might eventuate, depending on the sensitivity of the individual.

Mites may be real, though rare, ectoparasites or their presence may be purely accidental. Thus Khalil (1921) reported finding the eggs of mites (*A. farinæ*) in the fæces of 8% of 130 Cornish miners and the adult insects were swarming in buckets of excrement brought up from the mines. Endoparasitism of the urinary tract was reported by J. Mackenzie (1922) who found *A. farinæ* and *Tarsonemus* in recruits with nocturnal enuresis and in one case of hæmaturia. Carter and his colleagues (1944), in investigating cases of bronchitis and asthma in Ceylon, have found many species of dead mites in the sputum, and their suggestion that they might fulfil some pathological rôle in this situation has drawn fresh attention to this subject.

The genus tyroglyphus includes the well-known cheese and sugar mites, and Hirst (1920) stated that persons whose work brings them into contact with material infested with these living creatures are apt to suffer from forms of dermatitis known as "grocer's" or "copra" itch (see also Patton and Evans 1931). The females of *Aleurobius farinæ* and *Tyroglyphus siro* are not easy to differentiate. The male of the former has a thick first pair of legs with a large tooth-like projection from the inside of the femur. The body hairs are simple; none are pectinated and none are as long as the body. In *T. siro* in the female the vulva is placed on a slight heart-shaped elevation and the tarsi are shorter than, or equal to, the third and fourth joints added together (Michael 1903).

In 1921 one of us published figures of a mite and its egg in human fæces (Manson-Bahr 1921), and from time to time we have seen them in fæcal specimens, but the acarines were invariably dead and no signs of development were traced within the eggs. During the past year, however, we have again been meeting them with increasing frequency and have paid little attention to them thinking that they had been ingested in the food and passed unchanged through the alimentary canal. But recently two freshly passed fæcal specimens from two different people revealed eggs in development from the morular stage to that of the newly hatched nymph. A fully developed adult female (fig. 4) was discovered containing an egg ripe for extrusion. At first sight the eggs (fig. 1) suggested by their size (0·12 mm. × 0·07 mm.) and appearance those of some intestinal trematode, but the shell is by no means so dense or so well-defined and moreover lacks an operculum. The segmenting stage roughly resembles that of a large ancylostome egg, but measurements are naturally much larger (0·1–1·2 mm × 0·07 mm.). Specimens of fæces containing the eggs mounted in saline on slides and covered with sealed coverslips were kept under observation at room temperature in damp petri dishes for 36 hours. The development of the eggs, the budding of the larval legs, and the formation of its cephalothorax inside the egg to the emergence of the nymph could be followed (figs. 1, 2, and 3). It has been difficult to identify the mite with any degree of accuracy, for only females have so far been found, but they are probably examples of *Tyroglyphus siro*, judging by the characters already mentioned. It can be realised that in such a dense medium as fæces, and with the distortion caused by the coverslip, the exact position and length of the hairs and other minutiæ are difficult to discern.



Tyroglyphid mites in freshly-passed fæces. 1. Freshly laid egg. 2. Morular stage. 3. Egg containing fully segmented larva. 4. Adult female *T. siro* in fæces containing ripe egg.

The patient from whom this last specimen was obtained had been examined for recurrent attacks of diarrhœa. He came from the Isle of Man, where he had eaten quantities of over-ripe cheese, but what particular kind we have been unable to ascertain. Efforts to find similar mites in the rationed cheese now being sold have so far failed. But the evidence suggests that this is the cheese mite and that it is capable of developing in fæces during their passage through the intestinal tract. We are publishing these observations, which are admittedly incomplete, with the idea of assisting others to recognise the eggs in the fæces, where as far as can be ascertained their presence has no pathological significance. Neither of the two patients found to be harbouring the mites showed an eosinophilia of over 5%.

REFERENCES

Bohm, L. K. (1920) *Wien. tierärztl. Wschr.* **7**, 11.
Carter, H. F., Wedd, G., D'Abrera, V. St. E. (1944) *Ind. med. Gaz.* **79**, 163; see *Lancet*, 1944, ii, 351.
Gedoelst, L. (1911) Synopsis de parasitologie de l'homme et des animaux domestiques, Brussels.
Hase, A. (1929) *Z. Parasitenk.* **1**, 765.
Hieronymi, E. (1925) *Münch. med. Wschr.* **72**, 2157.
Hirst, H. S. (1920) Natural History, Economic Series. No. 6. London.
Khalil, M. (1921) *Proc. R. Soc. Med.* **14** (*Sect. Trop. Dis.* 24).
Küchenmeister, F., Zürn, F. A. (1881) Die Parasiten der Menschen, Leipzig.
Kunze, A. (1924) *Berl. tierärztl. Wschr.* **40**, 259.
Mackenzie, J. (1922) *J. R. Army med. Cps*, **39**, 339.
Manson-Bahr, P. H. (1921) Manson's Tropical Diseases, London, 7th ed.
Martini, E. (1925) *Ergebn. Hyg. Bakt.* **7**, 294.
Michael, A. D. (1903) British Tyroglyphidæ, London, vol. II.
Moniez, R. (1896) Traité de parasitologie animale et végétale, appliquée à la médecine, Paris.
Patton, W. S., Evans, A. M. (1931) Insects, Mites and Venomous Animals of Medical and Veterinary Importance, Croydon, vol. II.
Reh, L. (1925) *Z. Desinfekt.* **17**, 122.
Reye (1919) *Dtsch. med. Wschr.* **45**, No. 37.
Vitzthum, H. (1926) *Zool. Jb. A.* **52**, 407.

NEW TECHNIQUE OF SPINAL ANÆSTHESIA

A. R. HUNTER, MD GLASG., FRFPS, DA
ANÆSTHETIST TO MANCHESTER ROYAL INFIRMARY

EVEN today spinal anæsthesia is frequently induced by empirical methods with the result that its action is sometimes capricious and occasionally dangerous. Much has been made of the safety factor of the dorsal curve, but it is common knowledge that total spinal anæsthesia is quite readily produced by a relatively small overdose, no matter what the position of the patient.

The spread of a spinal anæsthetic can, however, be limited if the correct strength of solution is used. If a large volume is injected, the height to which sensation will be abolished will be governed by the volume of solution and its concentration. If the concentration is reduced to the minimum which will induce spinal anæsthesia, spread beyond the area in direct contact with solution will become impossible even if the table is tilted in the wrong direction. This safety measure, which is independent of abnormalities of the thoracic curve, of the angle of tilt of the table, and to a large extent of the specific gravity of the cerebrospinal fluid, is much more trustworthy than those at present relied on.

Pannett in 1929 demonstrated that 0·5% and 1% procaine ('Novocain') were inadequate for spinal anæsthesia, but that 1·66% would induce satisfactory anæsthesia

TABLE I—MINIMUM ACTIVE SUBARACHNOID CONCENTRATIONS OF ANÆSTHETIC DRUGS

Anæsthetic agent	Minimum effective subarachnoid strength (%)	
	Rabbits	Man
Amethocaine	0·05	0·1
Nupercaine ..	0·70	0·08
Procaine ..	0·9	1·25

and muscular relaxation. By an experimental method Bieter and his colleagues (1936) have worked out the concentrations of various agents required to produce anæsthesia of the exposed spinal nerves of the rabbit. I have worked out by a process of trial and error the corresponding concentrations for the intact human subject (table I).

The volume of the solutions of the various drugs employed will of course depend on the capacity of the spinal canal up to the level to which it is desired to produce anæsthesia. The published work on this subject proved rather contradictory, but again by trial

TABLE II—DOSAGE OF DIFFERENT AGENTS REQUIRED TO PRODUCE SPINAL ANÆSTHESIA

Operation	Segmental level of anæsthesia	Volume (c.cm.)	Dose in mg. of		
			Procaine	Nupercaine	Decicain
Cystoscopy, hæmorrhoids, &c.	L1	4	100	5	8
Herniotomy and lower limb operations ..	D10	8	120	7	10
Laparotomies ..	D6	12	150	9	12

and error it was found that 4 c.cm. of solution would produce anæsthesia to dermatome L1; 8 c.cm. to D10; and 12 c.cm. to D6. These levels correspond approximately to Poupart's ligament, the umbilicus, and the xiphisternum. These figures are more or less those given by Maxson (1938) for the capacity of the different parts of the spinal subarachnoid space.

On the basis of these volumes and concentrations a dosage table was elaborated (table II). The drug of choice is amethocaine hydrochloride ('Anethaine,' 'Decicain,' 'Pontocaine hydrochloride'). Onset of anæsthesia is rapid, taking rather less than 5 minutes. The duration of the anæsthesia is sufficient for nearly all major surgical procedures, amounting to some 3 hours. With 'Nupercaine' the onset of anæsthesia is rather

slower and the prolongation obtained by using this agent is not of much significance since there are few operations which cannot be completed under amethocaine. When procaine is employed there is a significant lengthening of the period of anæsthesia from the usual 30–40 minutes to about 70 minutes. The doses mentioned in the table below must be regarded as mimima. Both volume and quantity of drug may be increased by up to 20% in tall or broad patients. When very high anæsthesia is required, as for gastrectomy or cholecystectomy, the volume should be increased to at least 14 c.cm. and the dose of amethocaine to 14 mg. and of nupercaine to 10 mg.

The volume of solution required for this technique is attained by drawing up the dose of amethocaine to be employed into a 10 or 20 c.cm. syringe and then aspirating cerebrospinal fluid into the syringe to the required volume. Only hyperbaric solutions are used and consequently the diluted solutions will also be hyperbaric; in the case of low blocks this factor will limit spread. In order that CSF may be drawn freely into the syringe the needle point must be well within the subarachnoid space. Midline punctures are therefore to be preferred to the lateral approach. Ephedrine should be injected as with any other type of spinal anæsthesia.

This technique has been used for some 200 spinal anæsthetics. The results have been in every way satisfactory.

SUMMARY

A volumetric technique of spinal anæsthesia, applicable to hyperbaric solutions, is described. Spread of anæsthesia is regulated by employing the minimum effective concentration of drug and adjusting the volume of solution so as to reach the required nerve-roots. The method possesses the advantages of the standard Howard Jones technique but onset of anæsthesia is much more rapid and the patient need not be turned.

REFERENCES

Bieter, R. N., Cunningham, R. W., Lenz, O., McNeary, J. J. (1936) *J. Pharmacol.* **57**, 221.
Maxson, L. H. (1938) Spinal Anæsthesia, Philadelphia.
Pannett, C. A. (1929) *Lancet*, i, 271 and 1194.

CREAMS FOR TESTING THE SENSITIVITY OF ORGANISMS TO BACTERIOSTATICS

H. B. MAY, MB CAMB., MRCP — ASSISTANT DIRECTOR
DAVID STERN, MRCS — CLINICAL ASSISTANT
HALE CLINICAL LABORATORY, LONDON HOSPITAL

WITH the steady production of new chemotherapeutic substances and the development, during treatment, of insensitive bacterial strains, tests for the sensitivity of organisms to bacteriostatics have become increasingly important. Four methods are in common use:

1. The ditch-plate method (Francis 1942).
2. Cup method (Abraham et al. 1941)
3. Agar-hole method (Fleming 1942).
4. Application of paste (MRC War Memorandum No. 10).

The first three, though accurate, are time-consuming if a number of strains have to be tested against more than one antiseptic. The paste method, though quicker, is relatively inaccurate, but we have used it as a basis for the development of a qualitative test which can be employed with any antiseptic or antibiotic. The method is simple and we have demonstrated it to be reasonably accurate.

For penicillin sensitivity tests a cream was prepared according to the directions given by Clark et al. (1943), the final concentration of penicillin being 200 units per gramme. The cream is kept in the refrigerator and tested at weekly intervals against the Oxford H staphylococcus. A stable cream has been in daily use and has given a constant diameter of inhibition of this organism for 9 months. Propamidine cream was prepared by using 1 in 10,000 concentration in a water-miscible base, such as Halden's emulsifying base, but results were not as consistent as those obtained by the use of propamidine jelly prepared by May and Baker, Ltd. Sulphanilamide and sulphathiazole were prepared as a 5% suspension in Halden's base. Gentian-violet, proflavine, and other dyes were used in 1 in 1000 dilution in the same base.

For tests other than sulphonamide sensitivity, a confluent growth of the organism is made either on an agar or a blood-agar plate.

The creams are applied in the centre of quadrants of the plate by the use of a Hagedorn blood-taking needle with three cutting edges. The needle, conveniently mounted on a metal holder, is flamed and thrust for ½ in. into the cream and then pushed vertically into the agar plate until the point comes into contact with the bottom of the petri dish. The

Sensitive strain of staphylococcus showing inhibition by a sulphathiazole cream.

needle is rotated and withdrawn and a small amount of cream is thereby removed and remains in the track of the needle. After flaming and cooling the needle it can be used for another quadrant of the plate with another cream. The plate is incubated overnight and the zone of inhibition measured 16 hours later.

For testing the sensitivity of organisms to sulphonamides the agar plate is made with nutrient agar free of *p*-aminobenzoic acid. A heavy inoculum having been placed on one side of the plate it is carefully thinned out by parallel strokes of a platinum loop, the success of the method depending on the gradual and steady thinning out of the inoculum. Five insertions of cream are used at equal intervals across the plate. Although complete inhibition is often not obtained where the bacterial growth is confluent inhibition becomes obvious where the growth is thinner if the organism is sensitive to the sulphonamide used.

RESULTS

Twenty strains of staphylococci sensitive to penicillin were tested by the agar-cup method, using dilutions of penicillin of 10 units per c.cm. and 1 unit per c.cm., and the results compared with the corresponding inhibition by penicillin cream. The cream produced rings of inhibition of average diameter of 19·5 mm., all figures lying between 15 and 23 mm. Penicillin solution 1 unit per c.cm. on the same strains gave an average diameter of 19·7 mm., all figures lying between 15 and 24 mm. The 10 unit per c.cm. solution gave zones of inhibition averaging 28·4 mm. diameter, figures varying between 24 and 36 mm.

Twenty tests with penicillin cream by this technique were carried out on one sensitive strain of staphylococcus; the diameters of inhibition varied by less than 3 mm.

Insensitive strains showed no inhibition by the cream or by penicillin solution in agar cups.

Similar correlation was obtained with staphylococci and streptococci when tested with propamidine jelly and a 1 in 10,000 propamidine solution in agar cups; in all cases if inhibition was produced the ring given by the jelly corresponded to that obtained with the solution.

No numerical comparison can be made between the sensitivity of organisms to sulphonamides as shown by the ditch method of Francis and that produced by the cream

technique, because the width of inhibition in each case depends on the proximity of the colonies to each other. Organisms shown to be sensitive however by the former method were always inhibited by the latter, and there is considerable saving of time in the application of cream compared with that needed for the making of sulphonamide trench plates. A typical positive result obtained with sulphathiazole cream and a sensitive staphylococcal strain is shown in the figure.

SUMMARY

A rapid method is described for testing the sensitivity of organisms using antiseptic creams.

The cream method is comparable to the agar-cup and trench-plate methods and can be adapted for use with any antibacterial substance.

REFERENCES

Abraham, E. P., Chain, E., Fletcher, C. M., Gardiner, A. D., Heatley, N. G., Jennings, M. A., Florey, H. W. (1941) *Lancet*, ii, 177.
Clark, A. M., Colebrook, L., Gibson, T., Thomson, M. L., Foster, A. (1943) *Ibid*, i, 605.
Fleming, A. (1942) *Ibid*, i, 732.
Francis, A. E. (1942) *Ibid*, i, 408.

METAZOAN IMMUNITY

D. B. BLACKLOCK, CMG, M D EDIN.

PROFESSOR OF TROPICAL HYGIENE, LIVERPOOL UNIVERSITY

IN 1923, when in charge of the Sir Alfred Lewis Jones Research Laboratory in Sierra Leone, I was able to demonstrate that an acquired human immunity against a metazoan parasite was a possibility. The experiments were carried out with the larvæ of a fly, *Cordylobia anthropophaga*. This scientific name of the "tumbu" fly is sufficiently suggestive of the power which its larvæ possess of burrowing into the skin of human beings and of producing myiasis. The starting-point of the investigation was the occurrence in September, 1922, of a natural infection with nine of these larvæ, which underwent growth and development in the cutaneous and subcutaneous tissue, and were subsequently removed when 6–8 mm. long. After the lapse of 4 months repeated attempts were made to reproduce infection in the same subject by placing first-instar larvæ on his skin and allowing them to burrow into it. Although the larvæ found no difficulty in entering the skin they could not grow and develop there. In a paper by Blacklock and Thompson (1923), the evidence of the failure of these repeated infections is set out in a table. The first attempt to produce infection was made on the fingers; the remainder on the arm. The dates of the attempts in 1923, with the number of larvæ penetrating the skin shown in parentheses, were as follows: Jan. 30 (2); Feb. 18 (4); March 7 (4); March 30 (6); April 6 (12); April 10 (4); and April 23 (5).

During this work an interesting phenomenon forced itself on my attention. This was a well-marked cutaneous reaction, which in the successive experimental inoculations became progressively more extensive and striking. At each of the last six attempts at infection the local reaction was quite severe. The penetration of the larvæ was accompanied by great itching, and was followed within a few minutes by pronounced local signs and symptoms. At the point of entrance of each larva a white bleb quickly formed and spread in all directions. The larvæ were placed well apart, on an area of about 2 in. by 3 in., yet in all cases, within 50 minutes, the urticarial weals had coalesced. The irregular swelling produced was over 3 in. in diameter and raised in the centre to about ½ in. Around the white area was a zone of deep congestion which faded away at the margins. The rather tense swelling stood out clearly against the red background. At the same time severe itching was felt over the whole area affected. The pricking sensation caused by the larvæ boring in at the several points was also noticeable. By the next day the pricking sensation and both the swelling and the redness had disappeared, and the itching had to a large extent subsided.

A fairly comprehensive study of the flies (including descriptions of all the early stages and the adults), and of their habits and behaviour was contained in the paper mentioned. The finding recorded there that the wild rat is the reservoir from which man ultimately derives this infection added yet another to the long list of diseases associated with that pestiferous animal. Among the conclusions reached in the paper were—

> "An immunity has been proved experimentally to develop against attacks of the larvæ, not only in man but in animals.
>
> "The development of such an immunity in the case of cattle, in similar forms of myiasis, is considered a possibility and worthy of investigation."

This discovery, which seems to have afforded the first experimental proof of such an acquired human immunity against metazoa, was followed by further investigations. In 1927 Blacklock and Gordon published an account of work which confirmed the feasibility of producing a high degree of immunity in guineapigs against the larvæ. Photographs included in the paper showed in a striking manner the absence of damage to the skin of the immunised animal, in contrast with the very severe lesions produced in the non-immunised control, after the application of a large number of first-instar larvæ to the skin.

At this stage the Empire Marketing Board became interested, largely no doubt owing to the importance attached to the possibility of evolving a method of immunising cattle against such causes of severe and damaging myiasis as the warble fly. With the aid of a generous grant from the board attempts were made to devise a practical method of protection. Our hopes were unfortunately not realised, but this is not of course to imply that they are not capable of being realised. It may only mean that the ground was insufficiently covered. The time which could be given to the subject may have been too limited; and many routine duties had to be carried on at the same time by members of the staff. Our basic knowledge about this novel and complex subject was, in those days, extremely scanty, and the apparatus and techniques at our disposal were hardly adequate by present-day standards. There were, in addition, the many well-recognised difficulties—not encountered in temperate climates—which militate against the success of such researches in the tropics. The results of the last part of the investigation were published in 1930.

Several American workers had, meanwhile, taken up the study of the production of experimental metazoan immunity with enthusiasm; much work was done and definite progress was recorded. In 1929 Taliaferro's monograph on the immunology of parasitic infections was published; in 1930 H. M. Miller, jun., of Washington University, published a preliminary note of his experiments on immunity of the white rat to *Cysticercus fasciolaris*; in 1931 Miller published three papers, that issued in August being on the production of artificial immunity in the albino rat to a metazoan parasite; he also published six papers in 1932, all dealing with this metazoan parasite, and describing the various methods he had devised for immunising against it.

One of the more recent American publications which give full weight to the importance of metazoan immunity is that by Culbertson (1941), in which the reader will find a useful account of immunity in such metazoan infections as helminthiasis and myiasis. Culbertson set out the various tests which have been employed for the clinical detection of these infections in man and animals—the complement-fixation test for echinococcus disease in 1906, the precipitin test for it in 1907, and the skin test in 1911—and referred to the various tests for the diagnosis of schistosomiasis (1910), trichiniasis (1928), ascariasis (1924), strongyloidiasis (1925), filariasis (1930) and similar infections.

More British workers should follow these lines of research. Many young scientists who can make full use of modern techniques and recent advances in biochemistry and allied subjects have a great opportunity in this field to make discoveries which may prove not only of academic interest but of much practical value. There is not space here even to enumerate the parasitic infections of man for which preventive measures are urgently needed. Control of the metazoan diseases, desirable enough in temperate climates, is of particular importance in those warm latitudes in which many British colonies are situated.

References at foot of opposite page

Preliminary Communications

PENICILLIN LAMELLÆ IN EYE CONDITIONS

THERE is considerable evidence that penicillin, in the form of drops containing 500 units to the cubic centimetre, is a useful therapeutic agent in superficial infections of the eyes and eyelids.[1] The disadvantage of this preparation is that solutions of calcium and sodium penicillin deteriorate, even when kept at 0° C, and tend to become infected with penicillin-insensitive organisms. The solid form retains its activity for six months or longer at room temperature. Penicillin treatment of the eyes, therefore, has been almost entirely limited to institutions where refrigerators are available, and few patients have been able to receive it at home. We have investigated other methods for the prescription of penicillin in ocular conditions. Gelatin lamellæ containing penicillin were tried, but were unsatisfactory because they were unstable and the strength of drug failed rapidly. Lamellæ of lactose, each containing 100 units of calcium penicillin, were subsequently tried. They have proved, therapeutically, as satisfactory as penicillin drops, in a small number of cases, and their potency has remained unchanged after two months at room temperature. We intend to publish our results in full later, but we suggest that this method provides a substantial advance in the use of penicillin in ophthalmology, and that it will enable it to be used conveniently in the treatment of outpatients, and also may enable the drug to be employed for eye conditions in coming campaigns in the Far East.

We are indebted to the Director-General, Royal Air Force Medical Service, for permission to publish this note, to Squadron-Leader A. C. T. Vaughan who performed the bacteriological tests, and to Messrs. Burroughs Wellcome and Co. who prepared the lamellæ.

J. C. NEELY, B M OXFD, D O, Wing-Commander RAF
A. G. CROSS, M D CAMB., F R C S, Squadron-Leader RAF

1. Cashell, G. T. W. *Brit. med. J.* 1944, i, 420. Milner, J. G. *Ibid*, 1944, ii, 175. Crawford, T., King, E. F. *Brit. J. Ophthalmol.* 1944, **28**, 373.

Medical Societies

NUTRITION SOCIETY

NUTRITIONAL RÔLE OF THE ALIMENTARY MICROFLORA

THE Society met on Dec. 30, 1944, at the London School of Hygiene, when a discussion on the

Microbiology of Rumen Digestion

was opened by Mr. A. C. THAYSEN, PH D, of the chemical research laboratory, Department of Scientific and Industrial Research, who spoke of the microbiological aspect of rumen digestion with special reference to the digestion of cellulose. Very conservative estimates applied to his experimental data had shown that the dry weight of the microbial substance formed in the rumen of an ox during 24 hours was at least 400 g., containing 180 g. protein, 80 g. carbohydrate, and 8 g. "fat," and a total of 139 g. carbon. There was good evidence that this substance was digested by the host. The carbon thus made available represented some 15% of the total carbon of the ingested cellulose, amounting to some 2 kg. daily. The calculation undoubtedly underestimated the microbial synthesis; moreover, at least 11% of the cellulose carbon appeared in the rumen in the shape of organic acids, which were rapidly utilised by the host. Dr. Thaysen underlined the importance of the synthesis of protein and of vitamins by the microflora of the rumen.

Mr. F. BAKER, of the County Technical College, Guildford, emphasised the shortcomings of purely cultural methods of study of the microbial population of the gut, and described methods of direct microscopic observation by means of which, for example, the presence of iodophil species which had never been isolated in pure culture could be disclosed.

Mr. J. A. B. SMITH, D SC, of the Hannah Dairy Research Institute, spoke of the formation of protein. Various feeding trials in this country and abroad had shown that ruminants could utilise non-protein nitrogen in the form of urea or of ammoniated sugar-beet pulp for the production of meat, milk, and wool, provided sufficient carbohydrate was present to balance all the nitrogen contained in the diet. The proportion of nitrogen supplied as urea should not exceed 40%. The principal theory explaining the utilisation of non-protein nitrogen was that the bacteria abounding in the rumen used it for their own growth and multiplication and converted it into protein which was then digested by the host. Experiments had been in progress for several years at the Hannah Institute designed to collect evidence either for or against this theory. An ox with a rumen fistula was used. The more liquid fraction of rumen contents was incubated with urea and the synthesis of protein followed. In typical incubation experiments the urea was very rapidly converted to ammonia, the non-protein nitrogen (mainly the ammonia fraction) decreased, and there was relatively rapid synthesis of protein during the first 3 hours of incubation. It was calculated that some 300 g. of protein—roughly a quarter of the protein requirements of a cow yielding 2 or 3 gallons of milk daily—could be synthesised in this way. The main contributors to this synthesis were the micro-iodophil bacteria. Simultaneously with synthesis, hydrolysis of protein was observed to proceed in the rumen.

Mr. M. H. M. ARNOLD, of the research department of Imperial Chemical Industries, had calculated that the nitrogen of urea was utilised for milk-production at least as efficiently as that of blood-meal. He suggested that experiments on the utilisation of non-protein nitrogen should be of long duration to obtain predominance in the rumen of the most efficient organisms.

Mr. S. BARTLETT, PH D, of the National Institute for Research in Dairying, University of Reading, said that results of large-scale experiments on the value of urea for milk-production had been disappointing; addition of it to a diet already satisfactory depressed the milk yield and the supplement had no effect with a low nitrogen diet. The reason was probably that the practical diets lacked the readily available carbohydrate required for protein synthesis.

Sir JACK DRUMMOND, FRS, asked whether urea fed to cows would pass into the milk to any appreciable extent, but Dr. Smith said that the very small quantities present would be entirely harmless.

Vitamin Synthesis in the Alimentary Tract

Mr. S. K. KON, D SC, of the National Institute for Research in Dairying, reviewed the synthesis of vitamins by micro-organisms of the alimentary tract. The fact that ruminants could be maintained for long periods on a diet very low in certain vitamins had been noticed 30 years ago by Theiler, Green, and Viljoen working at the Onderstepoort institute in South Africa. With great foresight they attributed this faculty to the synthetic activity of the bacterial flora of the intestines. Since then the ability of ruminants to manufacture symbiotically the vitamin-B complex had been firmly established, and the formation in the rumen of riboflavine, vitamin B_6, pantothenic acid, nicotinic acid, and also of vitamin K had been experimentally demonstrated. The position regarding vitamin B_1 was curious: that the cow was independent of an exogenous supply of the factor had been proved beyond doubt, but it was possible that it was synthesised outside the rumen. The vitamins produced in the rumen were absorbed by the animal after passage through the true stomach. It had been known for a long time that the intestinal flora of other animals was also able to produce "vitamin B" and that experiments could be vitiated by coprophagy of experimental animals. Normally, when coprophagy was prevented, non-ruminants such as rats could benefit only to a very limited extent from the synthetic activities of the

PROFESSOR BLACKLOCK: REFERENCES

Blacklock, D. B., Thompson, M. G. (1923) *Ann. trop. Med. Parasit.* **17**, 443.
— Gordon, R. M. (1927) *Ibid*, **21**, 181.
— — Fine, J., Watson, M. (1930) *Ibid*, **24**, 5.
Culbertson, J. T. (1941) Immunity against Animal Parasites, NY.
Miller, H. M. jun. (1930) *Proc. Soc. exp. Biol., NY* **27**, 926. (1931) *J. prev. Med. Chicago*, **5**, 429.
Taliaferro, W. H. (1929) Immunology of Parasitic Infections, NY.

intestinal flora. At times, however, a condition of starch dyspepsia developed spontaneously in laboratory rats, and the phenomenon first observed by Fridericia in Denmark, and called by him "refection," enabled them to grow and thrive without an exogenous supply of the vitamin-B complex. Kon and his collaborators had found that with raw potato starch, the least digestible of starches, refection became the rule rather than the exception; they advanced the suggestion that, regarding its ability to absorb vitamins produced in the intestine, the refected rat became similar to the ruminant, the cæcal region combining the rôles of the paunch and of the true stomach. A peculiar phenomenon had been noticed in the rabbit—this animal passed two types of fæces, normal during the day and abnormal at night. The night fæces, closely resembling cæcal contents in composition, were seized and swallowed by the rabbit directly from the anus and doubtless constituted an additional source of the vitamin-B complex and of other factors.

Much valuable information about the synthesis of vitamins in the intestinal tract of animals and man had resulted from the application of a new technique, making use of the bacteriostatic action of sulphonamide drugs and especially of those which were poorly absorbed from the gut like sulphaguanidine and succinylsulphathiazole. The interference of these agents with the intestinal flora affected the vitamin economy of the animal. Of the various deficiency states induced by these sulphonamides, the leucopenia, granulocytopenia, and anæmia produced were probably closely related to a disease appearing spontaneously in monkeys receiving purified diets which had been extensively studied by Lucy Wills in this country, and also to certain states in man. Dr. Kon had obtained striking effects from the administration of sulphaguanidine to refected rats which were especially sensitive to such treatment because they had to derive the whole of their supply of the vitamin-B complex from endogenous sources. He then described the observations (reviewed in THE LANCET of Dec. 30, p. 854) of Najjar and Holt in the United States, and of Ellinger, Coulson, and Benesch in this country, concerning the endogenous synthesis in man of vitamin B_1 and nicotinic acid, and also the more recent American work on the formation of riboflavine in the human gut.

Mr. L. J. HARRIS, D SC, director of the Dunn Nutritional Laboratory, Cambridge, said that partial refection of varying intensity may be a very complicating factor in vitamin-B assays, especially of starchy foods. In his laboratory it had been necessary to use with such foods the bradycardia method because the ordinary growth method gave erroneous results. He underlined the value of sulphonamides in the study of refection.

Mr. A. EDEN, D SC, of the School of Agriculture, Cambridge, spoke of his work on coprophagy in the rabbit.

Prof. L. S. FRIDERICIA of Denmark gave details of the work on refection carried out in his institute and published in Scandinavian periodicals. He emphasised the connexion between the presence of starch and the synthetic activities of intestinal bacteria, equally noticeable with the ruminant and with the refected rat. He suggested that in man the formation of vitamins in the gut might well be affected by starch dyspepsia.

Sir JOSEPH BARCROFT, FRS, Mrs. R. A. MARSHALL, Mr. A. T. PHILLIPSON, and Mr. S. R. ELSDEN, of the Animal Physiology Unit, Cambridge, spoke of the production, absorption, and utilisation of the volatile acids in the rumen. Gastric digestion in the ruminant consisted primarily of the fermentation of carbohydrate, which was followed by true peptic digestion. The carbohydrate derived from foodstuffs such as grass was for the most part digestible only by the aid of bacteria, and the efficiency of the process could be judged by the fact that more than 50% of the crude fibre of grass was utilised. The lower fatty acids—acetic, propionic, and butyric—were the principal end-products of fermentation in the rumen. The total quantities formed were substantial and the amount present in the rumen of sheep taken straight from pasture expressed as acetic acid was of the order of 60 g. There was a sharp gradient of concentration of the fatty acids along the alimentary tract, an abrupt fall taking place in the abomasum or fourth stomach. Experimental evidence showed that this was due to direct absorption of the acids from the rumen, reticulum, and omasum. The blood draining the rumen contained more of these acids than blood from other parts of the alimentary canal or than peripheral blood. The total amount absorbed in this way by a sheep was of the order of 100 g. a day, or about a sixth of the intake of available carbohydrate, and there was no doubt that the ruminant took its vinegar as a food and not as a relish. The lower fatty acids were easily utilised, acetic acid better than propionic, and the perfused rabbit heart made, if anything, better use of acetic acid than of glucose. The mode of utilisation was under investigation by indirect calorimetry, by the use of acetic acid with labelled carbon, and by experiments with phloridzinised animals. The study of the bacterial flora of the rumen had indicated that yeast-like organisms, iodophil cocci, and members of the genus propionibacterium were definitely associated with the fermentation of carbohydrate.

Reviews of Books

Tropical Medicine

(5th ed.) Sir LEONARD ROGERS, MD, FRCS, FRS; Sir JOHN MEGAW, MB. (Churchill. Pp. 518. 21*s*.)

THIS well-known textbook has now undergone more extensive revision than in any previous edition. Portions of some sections, notably those on malaria, the leishmaniases, the trypanosomiases, the dietetic disorders, and the fevers of the typhus group, have been rewritten. While the original scope and general arrangement of the volume have been adhered to and additional information has been inserted, the additions have been countered by condensation of matter already there. Its actual bulk has even been reduced by cutting the margins and by using a thinner war-time paper. This is important for Service medical officers overseas, who will find "Rogers and Megaw" a handy companion.

Annual Review of Physiology

Vol. VI. Editors: J. M. LUCK; V. E. HALL, Stanford University. (Lewis. Pp. 630. 31*s*. 6*d*.)

THE forebodings inspired by an introductory lament (in verse) to this volume over the defection of certain too-busy reviewers are not fulfilled. The surviving reviews are a little longer than the average, a little more inclined to the narrative form—both desirable qualities—and as comprehensive as war-time conditions allow. It is encouraging to notice that the editors are alive to the demands of the times, and we welcome a newcomer to the contents in the shape of industrial physiology. Two or three authors have given their subjects a personal bias, and the reader a refreshing change. Now that the *Annual Review* has become established, the editors can afford sometimes to encourage the treatment of a special department of a subject. The pool of reviewers which can still be drawn upon is impressive. Three contributors are English, and we hope that as conditions improve a sprinkling of other foreign reviewers may be secured, even if their contributions have to be translated.

Practical Anæsthetics

J. ROSS MACKENZIE, MD ABERD., DA, lecturer on anæsthetics, University of Aberdeen, senior anæsthetist, Royal Infirmary, Aberdeen. (Baillière. Pp. 136. 10*s*. 6*d*.)

THE name of the author, the title, and the opening paragraph of the preface of this book raise high hopes, but the contents are a little disappointing. It is scarcely the "foundation on which the . . . hospital resident may build the practice of anæsthesia" which Dr. Mackenzie hoped to make it. Thus, on the first page, the reader is referred, for a rapid and useful estimate of the physical condition of the patient before and during operation, to Moots's Index. In discussing aperients it is stated that the regular normal daily stool need not be disturbed except at the request of the surgeon. Some errors have crept into the drawing and legends of the illustrations, and the text does not escape minor errors. Stress is laid on the choice of anæsthetic agents for particular operations, but the advice given could be more helpful.

DIVIDE YOUR SHEEP FROM YOUR GOATS

The goat is an interesting animal; but the evangelist has classed his case as irremediable.

TESTICULAR BIOPSY IS THE ONLY PRIOR CRITERION OF REVERSIBILITY IN CASES OF OLIGOSPERMIA AND AZOOSPERMIA.
SEMINOLOGICAL EXAMINATIONS FORETELL YOU NOTHING.

OF 127 INFERTILE MEN WITH LOW NEGATIVE SPERM COUNTS:

79 had lesions conceivably produced by gonadotrophic deficiency, hence worth treating with this hormone. On a very MILD dosage, 400 i.u. thrice weekly, 12 got a total sperm count of at least 200 million; 22 got an increase of several million. A number of the remainder showed growth of germinal epithelium with maturation of younger cell forms only, HENCE DESERVING OF MORE INTENSIVE THERAPY.

48 revealed irreparable atrophic or obstinate lesions, not dependent upon any endocrine defect whatsoever: Their gonadotrophic treatment was waste of time and material.

The case series quoted is that of Charny, C. W., Am. J.Med.Sce., 207, 4 p., 519 (1944). A consulting-room technique for testicular biopsy is detailed by (1) Charny, Amer. J. Mental Science, 207, 519 (April 1944) and by (2) Hemphill, 1944 (in press).

GESTYL ORGANON

GONADOTROPHIC HORMONE

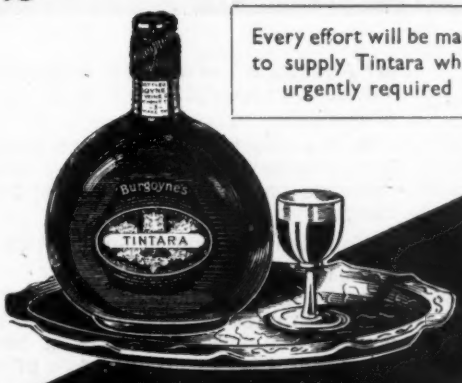
BRETTENHAM HOUSE, LONDON, W.C.2

TELEPHONE: TEMPLE BAR 6785 • TELEGRAMS: MENFORMON, RAND, LONDON

An *acceptable* Tonic and Stimulant

For debilitated patients and during convalescence, Tintara meets the difficulty of prescribing a tonic and stimulant that is both effective and readily taken. The fine flavour of this Australian Burgundy makes it acceptable to the most delicate. Produced from grapes grown on ferruginous soil, Tintara contains no added alcohol or sugar. It is a well balanced wine of minimum acidity and is entirely free from drugs.

Every effort will be made to supply Tintara when urgently required



Burgoyne's TINTARA

Pure TONIC BURGUNDY

P. B. BURGOYNE & CO. LTD., DOWGATE HILL, LONDON, E.C.4 *Phone CITy 1616*

INJECTION TREATMENT OF VARICOSE VEINS

'Ethamolin' as a sclerosing agent has the outstanding merit that, while it produces the firmest and most adherent thrombus, accidental leakage of the solution into the tissues around the vein will not cause sloughing.

Pain following the injection is very infrequent, and there is considerably less tendency to any reopening of the vein.

'Ethamolin' is a stable chemical compound of consistent potency ensuring uniform results. It is powerfully bactericidal, and thus it reduces to a minimum any risk of introduced infection from the injection.

PRODUCT OF THE GLAXO LABORATORIES

ETHAMOLIN

BRAND OF ETHANOLAMINE OLEATE

2 cc. ampoules in boxes of 6 and 100. Bottles 15 cc. and 30 cc.

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434.

AN IMPORTANT LOCAL ANAESTHETIC

● 'Anethaine' is a local anaesthetic with unusual and valuable properties, and is used in all forms of local anaesthesia.

In the effective dosage, the margin of safety is high. It has from 10-18 times more anaesthetic activity than procaine and is used in correspondingly lower concentrations.

Complete anaesthetic effect is of long duration, lasting from 1½ to 3 hours.

It has the very important property of high activity on surface application, and is thus the most suitable preparation for the anaesthetization of mucous membrane and wound edges prior to operative procedures or instrumentation, and in ophthalmology.

'Anethaine' is available in various packings for surface, infiltrative and spinal anaesthesia.

PACKS

Powder	... 1 *and* 5 *grams*
Solution 2% (external)	... 25 *cc.*
Solution tablets	10 × 0.1 *gram*
Ampoules (Spinal)	1% 6 *and* 100 × 2*cc.*
Dry Ampoules (Spinal)	... 6 *and* 25 × 10 *mg.*
Dry Ampoules (Spinal)	... 6 *and* 25 × 20 *mg.*
Infiltrative (Powder)	... 3 *and* 25 × 100 *mg.*

ANETHAINE

BRAND OF AMETHOCAINE HYDROCHLORIDE

PRODUCT OF THE GLAXO LABORATORIES

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

THE LANCET

LONDON: SATURDAY, JANUARY 20, 1945

The Infected Hand

IMPAIRED function of the hand is so serious a handicap to the man or woman who has to earn a living that the prevention and treatment of infections in this area must be looked on as a major problem. Better prophylaxis has been attained in the past few years through the expansion of industrial medicine. The industrial nurse is responsible for seeing that proper regard is paid to all the small pricks and abrasions to which factory workers are liable, and that expert attention is obtained where necessary. Further improvement along these lines, with special instruction for works doctors and nurses, could well be encouraged. In treatment there remain the old principles, the chief of which is that the infected part should be put at rest. Systemic administration of sulphonamides early and in adequate dosage has done much to improve results, especially in streptococcal lesions. Systemic penicillin promises great things, not only against streptococci but also in the locally more destructive and less responsive staphylococcal infections. Local chemotherapy, however, is less satisfactory, because access to the whole infected area is difficult and interferes to some extent with local rest. Failure to immobilise an inflamed finger will increase the inflammatory exudate and therefore the subsequent stiffness, as well as encouraging spread of infection. Hence the local application of penicillin, requiring dressings at least once daily, demands justification by results incontestably better than those from general chemotherapy, rest, well-timed incision, and rest again. FLOREY and WILLIAMS [1] have shown that such results may indeed be claimed, though their "control" cases might have provided better competition had they had less frequent dressing, no saline baths, and continuous plaster immobilisation. The diminished fibrous-tissue reaction which they observed with penicillin should lead to quicker and better return of function.

The best time for incision is still controversial and largely a matter for decision in the individual case. The general rule is to await localisation before interfering, but there are areas where this is to court trouble; pulp infections are an example. To give local penicillin access to the infected tissues, very early and rather bold incision—sometimes through uninfected areas—is practised; and here again the sacrifice of well-worn surgical principles can only be justified by results. The treatment of tendon-sheath infections, the most serious of all, is still unsatisfactory. BUTLER [2] notes a relatively better prognosis in streptococcal cases, for which he advises a small incision in the proximal part of the sheath and plaster immobilisation. He gives a hopeless prognosis for staphylococcal tendon-sheath infections, in which he says the tendon always dies and bones and joints become infected whether the incision is early or late. It is here that FLOREY and WILLIAMS offer some hope of help from penicillin. One common difficulty is to detect exactly which tissues are infected. A bloated and very painful finger, possibly with one or more sinuses, often gives no real indication whether the sheath is infected or not. Careful enlargement of existing sinuses and inspection in a bloodless field may show that the sheath is swollen and roughened, and the contents turbid; but the diagnosis may not be easy, and accuracy is particularly important when penicillin is used, because this substance will not cross membranes such as tendon sheaths, by whatever method administered.

The dressing applied after incision must not make the finger sodden, and magnesium sulphate paste is the best of the hygroscopic agents. (Magnesium sulphate and glycerin are now obtainable once more.) The dressing must not be irritating; and in this connexion the unpleasant and protracted skin reactions that may follow external application of sulphonamides should be remembered, though they are uncommon when the application is to so small an area as the finger. SMITH [3] notes that a thin serous discharge from the wound may be an early sign of sulphonamide sensitivity. The dressing should preferably not stick, and of course where there is much discharge this will not happen whatever is put on. Finally, the dressing must allow adequate drainage. The one that perhaps meets these requirements best is tullegras with a light dusting of sulphathiazole powder, the whole being encased in plaster for several days at least.

Cavernous Sinus Thrombosis

BACTERIA may invade the cavernous sinus by six different routes—the six anatomical venous communications—and the result may be an acute thrombophlebitis or a slow obliteration of the sinus. Invasion along any route may give rise to either clinical type of infection, but the commonest combinations are acute infection from anterior veins, and slow obliteration from posterior veins. EAGLETON'S monograph,[4] which contains examples of all the possibilities, is almost terrifying in its disclosure of dreadful results from the most trivial wounds and infections of the face, but fortunately the vast majority of cases of aural and nasal suppuration avoid the catastrophes he describes. The symptoms and physical signs in acute fulminating cavernous sinus thrombosis are striking enough to impress the most casual clinician, and treatment should never await their full display. The usual source of infection is a septic lesion of the face with spread along the veins entering the sinus anteriorly. Erythema of the eyelids and dilatation of the superficial veins appear early, and are followed by proptosis, chemosis, and papillœdema. These signs are due partly to the venous obstruction and partly to lymphatic engorgement and blockage; sometimes also to pus in the orbit. In addition, there are the manifestations of general blood-stream infection: swinging temperature, rigors or chills, sweating, and formation of metastatic abscesses. The chronic cases arise chiefly from aural suppuration with retrograde thrombosis from the lateral or sigmoid sinuses along one of the petrosals. This is usually a process sufficiently slow for a collateral circulation to form. Consequently the classical signs of venous obstruction are absent or transient, although subsequent phlebitis of

1. Florey, M. E., Williams, R. E. O. *Lancet*, 1944, i, 73.
2. Butler, E. C. B. *Lond. Hosp. Gaz.* June, 1944.
3. Smith, C. H. *Ann. Surg.* 1944, **119**, 266.
4. Eagleton, W. P. Cavernous Sinus Thrombophlebitis, New York, 1926.

the sinus wall or of the ophthalmic veins may cause chemosis and exophthalmos. The diagnosis is difficult and cases may pass unrecognised. Rarer forms of thrombosis follow spread along the pterygoid venous plexus or from the sphenoidal or other nasal accessory sinuses, or from direct contact with acute suppurating petrositis, and each may give rise to the acute or chronic syndrome.

Whatever its underlying cause, venous thrombosis must be regarded as a protective mechanism following on phlebitis. The thrombus may be aseptic—that is, the body defence may have overcome and destroyed the infecting organisms before or while the clot is forming—or septic, when this attempt has been unsuccessful. It is in this way that to the local effects of venous occlusion may be added the general ones of toxæmia together with septicæmia or pyæmia. Treatment must be directed against the general effects of the infection, and may also be needed to relieve the local effects of venous obstruction, since these can be disastrously incapacitating. But it is essential to remember that the thrombosis is a part of the natural mechanism of repair tending to a spontaneous cure. These principles have long been appreciated and attempts have been made to apply them in cavernous sinus thrombosis by direct surgical attack on the sinus itself and its tributaries and by more conservative methods such as serotherapy, blood-transfusions, and chemotherapy. In reviewing the cases successfully treated up to 1936 CAVENAGH [5] found that out of a total of something less than 50 cases (the number is uncertain owing to overlapping references and doubtful diagnosis) probably not more than 7 were of the acute infective type. Treatment by radical operation was adopted in 3 of them. Of the remainder, only 2 had been treated by operation on the sinus itself; the others cleared up with surgical eradication of the primary source of infection and of any localised areas of suppuration. Conservatism is a good rule in treating acute pyogenic infection of the sinus, operation being reserved for cases where pus has formed or there is necrosis of bone. Other methods of meeting the original onslaught of the infecting organisms are essential, preferably those acting in harmony with the normal body processes. EAGLETON (pp. 156–7) prophetically wrote: "The nature of the pathological anatomy of thrombophlebitis . . . would appear to be favourable for treatment by sterilisation of the blood-stream by . . . bactericides. . . . In the near future there will be discovered specific chemical compounds which will influence the different pyogenic infections of the blood-stream . . . and will be specific for (each type)." The sulphonamides and penicillin have fulfilled the greater part of this prediction. The sulphonamides are now part of the routine treatment of the early stages of an acute pyogenic infection of any severity, and their success in sterilising the blood-stream and the forming thrombus in the cavernous sinus has been recorded by SEYDELL,[6] MORRISON and SCHINDLER,[7] WOLFE and WOLFE,[8] and others. Since many of these sinus infections arise from superficial staphylococcal lesions it was to be expected that even greater success would be achieved with penicillin, and the hope looked like being fulfilled when, in their first series of infections treated with penicillin, FLOREY and his colleagues [9] restored a boy with cavernous sinus thrombosis from a moribund state to convalescence. This boy later died of a ruptured mycotic aneurysm, but subsequent cases have been more fortunate. Thus JOHNSTONE reported in these columns on Jan. 6 a case in which complete recovery was attained although penicillin treatment was unavoidably delayed for 10 days. Full doses of a sulphonamide and penicillin would seem the most promising combination, since some strains of streptococci and staphylococci, as well as *B. proteus* and *Ps. pyocyanea*, are resistant to one or other of these drugs. Chemotherapy is likely to cure just that type of case where the outcome was formerly almost hopeless—spread of infection from anterior veins draining a septic lesion of the face—because a lesion here is plainly visible, and any divergence from routine healing, or signs of more deep-seated mischief, become rapidly obvious, so treatment can be begun in time. The osteoplastic flap of Kroenlein, evisceration of the orbit, and other dramatic operative procedures are likely to be relegated to history except for cases where thrombosis and infection reach the sinus from more obscure lesions, and even here chemotherapy may succeed in sterilising the clot before it liquefies to pus.

It has been suggested that thrombus formation can be prevented by the administration of the anticoagulants heparin and dicoumarol. In addition to 3 recoveries with heparin recorded by LYONS [10] and SCHALL,[11] another was reported by MUNTARBHORN in our issue of Jan. 6. In all these cases full doses of a sulpha drug were also given. LOCKWOOD, WHITE, and MURPHY,[12] too, employed heparin and dicoumarol as an adjunct to penicillin in a successful case. But with the available evidence of recoveries with chemotherapy alone, and in the absence of controls, the addition of anticoagulants cannot yet claim to have established its practical value. They may have a part to play in the cases of chronic obliterative thrombosis which arise from the lateral sinus and spread to the cavernous sinus, for if the diagnosis is made very early heparin or dicoumarol could possibly limit the extension of the clotting process. In other cases it does not seem justifiable to oppose a natural defence mechanism.

A Regional Plan

THOSE who put their faith in regional planning will be pleased with an interim report just issued by the medical services committee of the Yorkshire Regional Hospitals Council.[13] If this is a fair specimen of a regional plan, it is certainly encouraging—always provided the plans can be translated from paper to practice. The committee is nicely balanced between the voluntary hospitals, the medical officers of health, the university faculty of medicine, and the general practitioners of the region; which, it should be explained, covers the East and all save the southern tip of the West Riding, but not the North Riding, which relates naturally to Tees-side.

5. Cavenagh, J. B. *Brit. med. J.* 1936, i, 1195.
6. Seydell, E. M. *Arch. Otolaryng., Chicago*, 1939, **30**, 429.
7. Morrison, L. F., Schindler, M. *Ibid*, 1940, **32**, 948.
8. Wolfe, C. T., Wolfe, W. C. *Ibid*, 1941, **33**, 81.
9. Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., Florey, H. W. *Lancet*, 1941, ii, 177.
10. Lyons, C. *Ann. Surg.* 1941, **113**, 113.
11. Schall, L. A. *J. Amer. med. Ass.* 1941, **117**, 581.
12. Lockwood, J. S., White, W. L., Murphy, F. D. *Ann. Surg.* 1944, **120**, 311.
13. Nuffield Provincial Hospitals Trust. Yorkshire Regional Hospitals Council. 1944. 6, Butt's Court, Leeds, 1.

The proposals follow closely those made in the interim report of Medical Planning Research,[14] and it is interesting to see how these theoretical conceptions prove applicable to an actual area. An intermediate type of hospital, between the key hospital and the peripheral hospital, is introduced under the name of district hospital. It is proposed that the 3 major or divisional hospital centres should be at Leeds, Bradford, and Hull; Leeds, as the university centre, would be the main one. There would be 9 district hospital centres, all staffed by whole-time specialists. Special departments would be situated within, and be part of, a hospital centre—an arrangement beneficial alike to patients and staff. There would be no sharp lines of demarcation to prevent a patient going to a hospital outside his own area, or even his own region, if he wished to do so; and this would remove one of the biggest disadvantages of the present municipal hospital service. Throughout the plan, municipal and voluntary hospitals are treated on a par, with common visiting specialist staffs, and common central admission bureaux. In estimating staff and bed requirements, the pre-war figures are omitted since those available are thought to be unreliable. However, it stated that a 15–20 per cent. increase in general surgical beds is needed, while the increase in beds for dermatology and thoracic surgery must be several hundred per cent. Again, there will be need of twice as many general physicians as before the war, while pædiatricians should be increased seven-fold. Such figures make one wonder how the people of Yorkshire have survived so long.

Detailed reports are made on each of the specialties. Whereas the subcommittee on general practice advocates surgery by general practitioners in peripheral hospitals, the main committee expects it to die out. Again, the GPs want a resident house-officer in each of their hospitals, while the main committee apparently does not. A house-officer would certainly be needed if the visiting surgeons were to do any large volume of work peripherally; but inasmuch as his presence might be an extra inducement to the practitioner to "do a spot of surgery on the side," he might not be an unmixed blessing. It is at the periphery that the plan seems to have been least clearly thought out; and it is here that things are most likely to go wrong, from the patient's point of view. By and large, however, the proposals appear sound; and provided the Minister of Health injects the necessary cash, the wheels of the Yorkshire regional hospital service should turn smoothly.

14. *Lancet* (Suppl.), Nov. 21, 1942.

RECRUITMENT OF B1 OFFICERS.—To meet the needs of the Services in forthcoming campaigns the Central Medical War Committee will shortly be issuing preliminary recruitment notices to all resident medical officers, resident surgical officers, and others who have held a B1 post or posts for two years or more (Ministry of Health circular 180/44). The Minister of Health is not unmindful of the needs of the civilian population and he appreciates that many of these doctors have been retained to deal with Service patients treated under the Emergency Hospital Scheme, but he is advised that it is now necessary to consider their recruitment and he urges hospitals, wherever possible, to release them. Substitutes may be found among holders of A and B 2 posts, and he suggests that it will be to the advantage of hospitals after the war if these young men, who would otherwise have been recruited to the Forces, can now be given further experience. Replacements may also be found among medical officers invalided from the Forces or released on the application of the Central Medical War Committee.

Annotations

UNIVERSITY STUDENTS AS CRITICS OF FACTORY LIFE

TWENTY students from the Universities of Oxford, London, Cambridge, St. Andrews, and Liverpool spent six weeks of their vacation working in a large factory. They were acting as "guineapigs" in a field experiment aimed at discovering whether a certain chemical produced ill effects on the people who had to handle it. During their stay at the factory they were encouraged to record their impressions of the social and technical side of the work. Dr. Alice Stewart and Miss Mary Lamb summarise and discuss the students' impressions of their factory life.[1] At first they thought that the welfare conditions were good, but they later realised that there were snags, and that production was hampered by a number of small irritations which, taken together, induced a cynical or indifferent attitude on the part of the workers. The students soon learnt that nothing is more certain to undermine a fundamental willingness to work than constant petty irritations and mismanagements, and they felt also that too little was done to ensure that the worker really knew what he was doing and felt it to be important. This, they thought, was the chief cause of absenteeism, slackness, indifference, and careless work. Another cause of absenteeism, particularly amongst the married women, was the delay caused by irregularity of supplies of goods essential to production. The married women, with homes to run, inevitably felt that they had something better to do than to hang around wasting time at the factory. In this factory little was done to familiarise the workers with the possible consequences of carelessness at work. The products of the factory were dangerous to the workers themselves and to those who had to handle them after they left the factory. The students approached the management and were given a special lecture on the nature and uses of the products on which they were engaged; they were also taken on a tour of the whole factory so that they might see how the various processes were related. It was not customary to give these privileges to the other workers in the factory.

The students commented unfavourably on the general factory hygiene. They found the sanitary accommodation most unpleasant because it was only cleaned once a week; most of the time the place was very dirty and foul-smelling and there were no locks on the lavatory doors. The workers appeared to have little confidence in the factory doctors. Medical examinations were said to be perfunctory in the extreme.

No-one who has experience of industry will quarrel with the conclusions reached by Dr. Stewart and Miss Lamb, but it is perhaps a mistake to say, as they do, that theirs is a new approach to the problem. Again, no generalisations about factory conditions should be made from those observed at this particular factory, which was obviously large—too large—new, and unwieldy. There had been apparently little time for personalities and processes to settle down. In old-established factories things are better. Sanitary accommodation is clean and wholesome in many of them. Workers have, and use, the power to express themselves either direct to the management or through works councils and joint production committees. Many of them make suggestions, which are accepted, for improvement in working conditions and in technical processes. In many instances the better "channels of communication" for which the authors plead are already laid down. But it nearly all depends on the people in charge and on their personalities. When the factory is small enough for each worker to be personally known to the manager, there is little or no trouble. There are of course unhappy factories, but also many happy ones, and these are usually places employing

1. *Industrial Welfare*, Nov.–Dec., 1944, p. 175.

PRINT IN BINDING

a thousand workers or less. The larger factories often have a somewhat soulless atmosphere. As for the doctors in the students' factory, it is permissible to wonder how much they were irritated and hampered by lay control and how far they were encouraged to run their own show. Doctors, as well as students and workers, react unfavourably to an unsympathetic atmosphere.

PREPAYMENT HEALTH SCHEMES IN THE USA

THE United States were built by individualists, pushing ever further west into a hard and unknown land. In such an atmosphere, where any man can still rise to the top by his own ability, opportunity has naturally been valued more highly than security, and self-help more than governmental assistance. This state of mind is reflected in the attitude of American doctors to social security and health service schemes. For a long time the American Medical Association did not look with favour on organised health-insurance schemes. Despite this, such schemes have developed progressively, and a series of articles in the Association's journal [1] set out details of the way in which some of them are organised. Broadly speaking, the AMA is now supporting prepayment schemes organised jointly by doctors and industry, but not those in which doctors are employed on a salaried basis by groups of the general public. Addressing the National Physicians Committee on Nov. 27, Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, said: "It is well within the desire and ability of American medicine to develop for the American worker plans for the provision of medical care which will be democratic in their conception and in their functioning and which need not serve necessarily as the basis for destruction of the American way of living."

In the main, existing prepayment services have been built up by individual industrial concerns. Entry, which is generally voluntary, is usually confined to workers earning less than $3000 (say £600) a year. Some services cover workers only; others provide medical care for dependants. Some offer a complete service including home doctor, specialist, and hospital; others offer only a partial service, perhaps with a measure of cash assistance towards the cost of non-provided treatments. The doctors are as a rule paid on a fee-for-service basis, though in a few cases they get a salary. Free choice within a list of coöperating practitioners is the rule. The disadvantage of organising a health service on a factory basis, in a country where industrial conditions fluctuate violently, is recognised by the establishment of the Michigan and Massachusetts State prepayment programmes. Michigan already has a membership of over 600,000, while in a year and a half Massachusetts has enrolled over 34,000 people. Weekly premiums vary not only from scheme to scheme but inside each scheme on a basis of current disbursements. A further variation is introduced since some schemes relate weekly premiums to incomes. The annual cost per person eligible seems to range from about $17 to $22 (£4 5*s*. to £5 10*s*.), giving an average contribution of something under 2*s*. a week, or 10*s*. a week for a man and wife with three children. Since contributions fluctuate with the total use made of the service, there is an incentive, albeit rather indirect, for the individual patient to confine his demands for medical treatment to essentials. A whole-time medical director is usually responsible for seeing that the doctors, for their part, do not carry out unnecessary treatment for the sake of the fees.

An attractive feature of American prepayment plans is that their management is usually in the hands of a joint committee, with the majority of its members elected by subscribers, and the minority by the participating doctors. Thus the two parties are encouraged to work together for the common good. The indigent poor are generally regarded as a reasonable charge on the community as a whole, through taxation.

A constructive addition to the story is provided by a report on the Principles of a Nation-wide Health Programme,[2] produced by a joint committee of doctors, medical administrators, and economists, among whose members are Solomon Bloom, Hugh Cabot, John Peters, and Kingsley Roberts. Their main recommendations are compulsory contributory insurance, payments related to earnings, free choice of attendance by patient and doctor, joint administration by doctors and consumers' representatives, and payment on a fee-for-work, capitation, or salaried basis, the decision to be made by the majority vote of the local doctors. At present, according to a nation-wide survey conducted by the National Opinion Research Centre of the University of Denver,[3] 34% of people have some insurance helping to meet hospital bills, while 14% have some insurance helping to cover doctors' bills; 31% admit having been put off seeing a doctor because of the cost, 68% favour a social security plan covering medical services, and 82% think something should be done for people to get the medical care they need. The difference between the two last figures is accounted for by a minority who favour private insurance schemes.

THE CHILD WITH A CRIPPLED HEART

THE discussions accompanying the passage to the Statute Book of the new Education Act have brought to the fore the question of the education of our physically defective children. Some indication of how Chicago tackles the problem is given in a report [4] on 20 years' experience at a special school in that city for children with various physical defects. This report is concerned only with the children with cardiac lesions. It is based on 233 cases, of whom 130 had been re-examined just before the report was written, and 56 were known to have died since they left the school. Of the 233 children 85% had rheumatic heart disease and 9·4% congenital lesions. The average age at entrance to the school was 12 years. The families from which the children came were rather large, on the average, most of them consisting of four or five children. Their socio-economic status was good in 38%, fair in 39%, and poor in 23%, the school being situated in one of the poorest districts of Chicago. The 130 children whom it was possible to re-examine were equally divided between the sexes, and at the time of re-examination ranged in age from 17 to 33 years. Of the women, 32 were married, 14 had one child, 3 had two children, 1 had three children, 2 had had four pregnancies, and 3 were pregnant. In no case was there any evidence that the heart lesion had adversely affected either pregnancy or labour. Recurrences of rheumatic fever since leaving the school were reported in 20% of this group. The cardiac status of 104 of the 130 had either improved or remained the same since they left. Only 5 members of this group had never worked or were not working at the time of re-examination. The jobs they were doing were most varied, including such exclusively American ones as "26 girl," "subway mucker," and "candy packer," while their recreational activities ranged from sewing to basket-ball, speed-boating, and hunting. In assessing the significance of the mortality-rate—26% in the 233 cases—it has to be borne in mind that admission to the school depended on whether the child "by reason of disease, accident, or congenital deformity cannot attend a regular school with safety and profit"; in other words, only the severer cases of heart disease were admitted.

With notable exceptions, such as the London County Council, we in this country have been behindhand in

1. *J. Amer. med. Ass.* 1944, **126**, 331–348.

2. Committee on Research in Medical Economics, 1790 Broadway, New York. November, 1944. 10 cents.
3. What do the American people think about Federal Health Insurance? University of Denver, 1944. 50 cents.
4. Kohen, K. H., McEldowney, R. P. *Amer. Heart J.* 1944, **28**, 491.

our provisions for the rheumatic child. Too often these unfortunate children have been allowed to spend their lives wandering in and out of hospital, "interesting cases" for the student but neglected as human beings with the hopes and aspirations of youth. It is practically a decade since Ritchie [5] pointed out that "the onus of instructing the people, local authorities, and the State regarding health measures rests upon the medical profession, which has therefore the bounden duty of advising the community regarding the measures that ought to be taken to curtail the scourge of acute rheumatism. Now is a propitious time for that advice to be given." Perhaps Mr. Butler will be able to ensure that in the new educational era on which we are entering the cardiac cripple will not lack schooling.

NITROGEN BALANCE IN BURNS

THE loss of nitrogen by exudation from burnt surface has now been carefully studied. Hirshfeld and his associates [6] collected the exudate in a special dressing woven from fine glass fibres ('Fibreglass') and found that in 6 patients this accounted for 3–25% of the total nitrogen output. Co Tui and his co-workers [7] collected the exudate from two burnt patients and estimated that they lost 0·42 mg. and 2·26 mg. of nitrogen from each square centimetre in 24 hours. Taylor [8] points out that there is a well-marked tendency to a negative nitrogen balance in burnt patients because increased urinary output of nitrogen, loss of nitrogen in the exudate, increased demands of nitrogen by healing tissues, and increased requirements due to infection all accompany the body's attempts at recovery. The maintenance of a positive nitrogen balance is thus of fundamental importance, but these workers all agree that it is also extremely difficult. Various methods can be used, such as high-protein diets, which alone do not seem to suffice, or intravenous infusions of plasma, which may be difficult to maintain long enough. Co Tui and his associates believe in the administration of amino-acids, and refer enthusiastically to a substance they call 'Amigen' though they do not reveal its nature. Levenson [9] concentrates on limiting the loss of exudates from the burnt areas and advocates pressure dressings with splints or close-fitting casts, without preliminary cleansing. He insists that the pressure dressing should be applied as early as possible, that it should extend well beyond the burnt area and always to the end of an extremity, and that the pressure must be even. The perfecting of chemotherapy and our organisation for the efficient first-aid treatment of shock, and the recognition that the burnt patient requires a greatly increased nitrogen intake together seem likely to make the outlook for the severely burnt patient far less dismal.

PUNISHMENT FOR ILLNESS

FOLLOWING strong recommendations by the Surgeon-General US Army, the subcommittee on venereal diseases of the National Research Council, and other eminent authorities, the government of the United States have repealed an Act of 1926 whereby personnel of the navy and army absent from duty on account of the direct effects of venereal disease due to misconduct were subjected to penalties involving forfeiture of pay.[10] The new legislation abolishes all punishment for venereal disease, which is now defined as having been acquired "in line of duty" instead of as formerly "due to wilful misconduct," provided that there has been no attempt at concealment and that at the time of infection the sailor or soldier was not an absentee or a deserter. The statute also provides that, with the same exceptions, any disability ensuing may be regarded as attributable to service as regards pension and compensation benefits.

The acquisition of venereal disease has never been penalised per se in the British armed forces, but all cases of illness or disability due to the patient's own fault, necessitating hospital treatment, are liable for hospital charges, which among non-commissioned ranks amount to eighteen pence a day. If this rule was enforced a man who broke his leg in a motor-cycle accident on an illegal or unauthorised journey would have to pay 1*s.* 6*d.* a day towards his hospital treatment, in common with men suffering from venereal disease acquired by illicit intercourse. But recently in the case of VD it has been recognised that this might lead to concealment, and the Army and Royal Air Force now follow long-standing naval practice whereby no charges are levied for the first thirty days of hospital treatment for venereal disease, those after that time being at the reduced rate of 10*d.* a day. With modern treatment, a stay of longer than thirty days in hospital is very rare, but it is difficult to understand the reason for what is in effect the punishment of those who fail to respond to treatment. It is understood that the medical authorities of our three Services are unanimously in favour of abolishing every vestige of penalisation, retaining of course the present punishment for concealment. But belief in the eleventh commandment—Thou shalt not be found out—dies hard.

TREATMENT OF ALCOHOLISM

IN a report lately published [1] in New York by the Research Council on Problems of Alcohol, Corwin and Cunningham argue that the primary responsibility for the treatment of alcoholism should be undertaken by general hospitals, the present-day tendency to do away with special hospitals being extended to institutions for alcoholism. Yet alcoholics are often trying patients and their numbers in America seem to be relatively large. The general hospital, therefore, for most of them would act only as a clearing station, whence each patient would be drafted to the sort of employment or specialised institution judged most suitable to his type of inebriety. The promotion of clinics for addicts in outpatient departments of hospitals is advocated in connexion with this scheme. More would be required than "jaunty sobering-up treatment," which is said to be the present limit of interest shown in alcoholics by general hospitals. But a great number of psychopathic alcoholics do not wish to abstain, and for them the recommendations of the report would be useless. The only way to deal with this group, the authors suggest, is by various compulsory measures, which would involve legislation; but in England the history of the Inebriates Acts has shown how futile such legislation becomes in practice. The facilities for treatment of alcoholics in pre-war England, France, Germany, Russia, Sweden, and Switzerland are adjudged inadequate. In Germany the Nazis have abolished previously existing institutions and content themselves with sterilising "hopeless inebriates," hoping they will then drink themselves to death as quickly as possible. In other countries, where facilities are better, alcoholics fail to take full advantage of what is available. Hence again the need for compulsion, though the ills arising from attempted prohibition are admitted. In Russia all alcoholics are said to be registered and to be kept under the direction of "specialists in narcology." A questionaire, addressed by the Michigan State Hospital Commission to authorities in 47 states, and to 23 acknowledged experts, asked whether alcoholics should be treated in a separate institution; 41 replies out of 52 said yes, and 11 said no. Of 56 replying to other questions all favoured a rural rather than an urban site

5. Ritchie, W. T. *Brit. med. J.* 1936, i, 679.
6. Hirshfeld, J. W., Williams, H. H., Abbott, W. E., Heller, C. G. Pilling, M. A. *Surgery*, 1944, **15**, 766.
7. Co Tui, Wright, A. M., Mullholland, J. H., Barcham, I., Breed, E. S. *Ann. Surg.* 1944, **119**, 815.
8. Taylor, F. H. L. *J. industr. Hyg.* 1944, **26**, 152.
9. Levenson, S. M. *Ibid*, p. 156.
10. Editorial, *J. Amer. med. Ass.* 1944, **126**, 632.

1. Institutional Facilities for the Treatment of Alcoholism. E. H. L. Corwin, Elizabeth V. Cunningham. New York: Research Council on Problems of Alcohol. Rep. no. 7. Pp. 85.

PRINT IN BINDING

for the institution, and 53 were in favour of legal means of detention. The length of legal detention advocated varied; a large majority favoured an indeterminate period and the bias is towards long rather than short terms. The report's leaning towards compulsion is unlikely to be regarded favourably in this country. Yet our great voluntary hospitals might consider the plea that they should act as the first line of attack on alcoholism. The emphasis of the report is on the inadequacy of hospital facilities for treatment, but it commends the educational and preventive work being carried out by temperance and other social service societies.

MEDICAL OFFICERS OF HEALTH ON THE WHITE-PAPER

THE council of the Society of Medical Officers of Health, having considered the Government's proposals for a National Health Service, have issued a report declaring that provision of hospital services has been diligently pursued by local authorities since 1930 and it would be "extremely unfortunate if the progress of this work were disturbed by transferring these services from the major local authorities to joint boards and disrupting their necessary relationships with the other health services of local authorities." The society recommends:

(1) That the medical and health functions of various Government departments be brought within one central Health Ministry with a Cabinet Minister as the responsible head.

(2) That, pending the formation of suitable local-government units, area hospital councils be established to advise the hospital authorities and the Minister as to the distribution of hospitals in the areas, and that such additional hospital accommodation as may be required be provided and maintained by existing hospital authorities, municipal or voluntary, singly or jointly, as may be necessary, in accordance with the plan as approved by the Minister.

(3) That as soon as possible the necessary steps be taken to resolve the chaos of local-government administration, special consideration being given to the needs of Greater London.

It is suggested that in any local-government area there should be a single authority for health purposes and that the extended health services should be administered, in the larger local-government areas required, by elected bodies responsible for the other services of local government.

PENICILLIN IN EYE INFECTIONS

OF the organisms commonly causing eye infections the most sensitive to penicillin are the hæmolytic streptococcus, the gonococcus, and some strains of staphylococcus. *Streptococcus viridans* and the pneumococcus are less sensitive, and staphylococci vary from extreme sensitivity to extreme resistance. It is now two years since penicillin was first used clinically as a local application to the eye and to judge from reports so far published it seems doubtful if our expectations of its usefulness in external eye disease will be realised. All agree that it is now the treatment of choice in gonococcal ophthalmia neonatorum, being an improvement on sulphapyridine for this condition, and it has also proved remarkably successful in clearing up chronic ulcerative blepharitis, hitherto a most disfiguring and resistant disease. Varied results have attended its use in catarrhal and mucopurulent conjunctivitis other than gonococcal, and in the treatment of corneal ulcer, and Keyes [1] finds that there is not much to choose between penicillin and sulphathiazole for these infections. Penicillin has been used in strengths ranging from 250 to 10,000 units per c.cm. of normal saline, the usual strength in this country being 500 Oxford units to the c.cm. If used in the form of drops the penicillin must be instilled every half-hour for acute infections, and this in itself is a handicap to its universal use. If kept at room temperature, the drops lose much of their effectiveness in 48 hours and they should therefore be kept in a refrigerator. On the eyelids penicillin ointment is useful and Keyes used 25% hydrous wool fat and 75% cold cream as a base, one gramme of ointment containing 500 units of penicillin. Neely and Cross describe in this issue a penicillin lamella, each lamella containing 100 units. The lamellæ have the advantage that they do not degenerate at room temperature and preserve their potency for a long time, being thus especially useful for Service conditions. For acute iritis due to the gonococcus there seems no doubt that penicillin given intramuscularly by injection or by drip is effective, and it is also recommended as an irrigation for the anterior chamber of the eye in severe infections and war wounds. Cashell [2] irrigated the anterior chamber in 2 cases of perforating injury with good results.

1. Keyes J. E. L. *J. Amer. med. Ass.* 1944, **126**, 610.

NEGOTIATIONS OPEN

NEGOTIATIONS between the Government and the medical profession on the proposals for a National Health Service opened on Friday of last week, when Mr. Henry Willink (Minister of Health) and Mr. J. Westwood (joint parliamentary under-secretary for Scotland), met the Negotiating Committee appointed by professional bodies. The committee has 31 members, 16 being appointed by the British Medical Association, 3 by the Royal College of Physicians of London, 3 by the Royal College of Surgeons of England, 3 by the Scottish Royal Medical Corporations, 2 by the Royal College of Obstetricians and Gynæcologists, 2 by the Society of Medical Officers of Health, and 1 each by the Society of Apothecaries of London and the Medical Women's Federation.

THE President of the United States has awarded the military decoration of the Legion of Merit to Major-General Sir ERNEST COWELL, FRCS, "for exceptionally meritorious conduct in the performance of outstanding services from September, 1942, to March, 1944," as director of medical services at Allied Headquarters in the Mediterranean. General Cowell was responsible for the medical services of the forces landing in North Africa, Sicily and Africa. He "welded together the medical services of the American and British forces and produced a highly successful organisation which resulted in the saving of many lives and contributed to the well-being and comfort of the sick and wounded of both nations."

Sir THOMAS BARLOW, FRS, consulting physician to University College Hospital and to the Hospital for Sick Children, Great Ormond Street, died in London on Jan. 12. He was in his 100th year.

2. Cashell, G. T. W. *Brit. med. J.* 1944, i, 429.

VOLUNTEERS FOR RELIEF WORK.—The Minister of Health (Circular 1/45) considers it right that medical officers of local authorities who are anxious to volunteer for relief work abroad should be given the chance to do so, though he stresses that the needs of public health in our own country must not be overlooked. Volunteers for posts under UNRRA, or with the voluntary societies who are members of the Council of British Societies for Relief Abroad, should therefore obtain the consent of their local authority before making application through the appointments offices of the Ministry of Labour and National Service. This preliminary assent will not, however, bind the local authority to release the applicant, and the authority will be consulted again before the officer is actually engaged. The Minister has recognised relief work undertaken in accordance with these arrangements as war service for the purposes of the Local Government Staffs (War Service) Act 1939.

Special Articles

TECHNIQUE FOR SURGICAL PHOTOGRAPHY

B. RICHARDSON BILLINGS, MRCS, ARPS

THESE notes set out the result of experiments with apparatus I have found useful in clinical photography, particularly in photography of surgical operations under aseptic conditions. The outfit is sufficiently portable to be used in ward or casualty department, and even has uses other than clinical.

The first essential is a suitable tripod. The base of this is heavy and each corner is castored (fig. 1); from this a standard rises perpendicularly, adjustable and graduated in inches; it supports at its upper end a horizontal tube (A) on which is clamped the baseboard. This simple construction gives adjustment to the baseboard (B) movable in three planes, a single nut controlling each plane: in other words, we have the much desired "universal movement." On the baseboard slides a sub-baseboard (C) to which is affixed the camera itself. This sliding movement is one of the factors governing eventual focus and size of picture. The sub-baseboard can be fixed in any selected position.

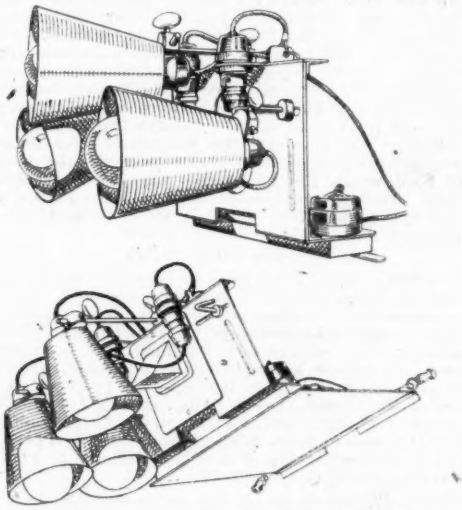


Fig. 2—(*a*) arrangement for "straight-through" subjects; (*b*) underview of sterilisable plate for operation subjects.

The front of the baseboard carries—again by a single fixing wing-nut—the head, comprising illuminant and reflector.

Illumination comes from two or more shaded 'Photoflood' bulbs mounted in chosen positions round a form of lens hood (fig. 2*a*). The bulbs are wired in series-shunt fashion controlled by two switches, one on either side of the base, so that one or both bulbs can be used, either at half or full strength. In addition there is a central removable shaded incandescent lamp; this was found useful for focusing, since even at half power the photofloods give out too much heat to be comfortable if left on longer than the time required for the actual exposure, especially with ciné shots. Moreover, this pilot light prolongs the life of the photofloods. These can be fixed one on either side or both on the same side, and swivelled or rotated through any angle between vertical and horizontal, so fitting the needs of all conditions likely to be met. A further considerable advantage is that this part of the head may be used as a supplementary switchboard when photographing subjects at a distance from the camera.

The reflector is the crux of the idea: a mirror is housed in a removable metal hood at an angle of 45° to the optical axis of the camera, and this is always used except when photographing subjects in line with the optical axis. The principle is the same as in the laryngoscope and presents a "surgeon's-eye view" of the field of operation. It thus eliminates the distortion and foreshortening inevitable with the camera at any other angle or at any other distance, with or without a telephoto lens.

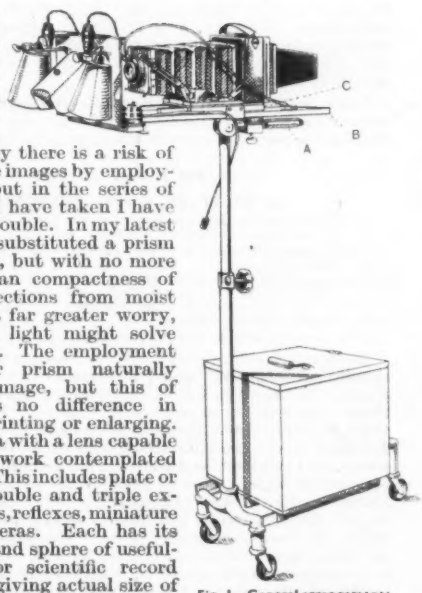


Fig. 1—General arrangement: (A) horizontal arm carrying (B) baseboard, lamps and reflectors. (C) sub-base board which carries the camera.

Theoretically there is a risk of getting double images by employing mirrors, but in the series of photographs I have taken I have not met this trouble. In my latest model I have substituted a prism for the mirror, but with no more advantage than compactness of design. Reflections from moist surfaces are a far greater worry, but polarised light might solve this difficulty. The employment of mirror or prism naturally inverts the image, but this of course makes no difference in subsequent printing or enlarging.

Any camera with a lens capable of doing the work contemplated can be used. This includes plate or film types, double and triple extension models, reflexes, miniature and ciné cameras. Each has its own domain and sphere of usefulness. But for scientific record photographs giving actual size of subject are preferable. Whatever the camera, focusing must be critical and all aids to this end should be employed.

The whole head, with bulbs, switches, wires, hood and mirror, is detachable from the baseboard as a single unit. When not in use it is kept in a metal airtight chamber containing formalin vapour, which is considered to sterilise it sufficiently. When about to be used, the head is lifted with sterilised tongs from the cabinet and fixed to the baseboard by its nut. Underneath the head a large flat metal plate can be clipped on (fig. 2*b*); this plate is boiled before the operation and fixed in position by one of the "clean" theatre assistants who uses a pair of ordinary towel clips to lock it in place. The front and underpart of the apparatus, which comes over the operating table, can thus be regarded as sterile; the photographer's terrain (i.e., behind and on top) is guarded from that of the surgeon.

Most of the details can be settled beforehand, so that when the surgeon is ready for the photograph it takes the photographer only a minute or less to wheel the camera into position on either side of the table, focus, light up and press the button; then the camera is wheeled out of the way. Teamwork scores.

For the photography of pathological specimens, copying charts and the like, an adjustable easel is added vertically below the mirror, which helps to standardise the work (fig. 3). The easel is a flanged frame with a plain glass bottom. The lights are brought down on to adjustable lamp-brackets to illuminate the specimen laid on the glass, below which, at a suitable distance, is a white background—a towel suffices. This gives a shadowless field. A washable celluloid footrule should be included in the picture.

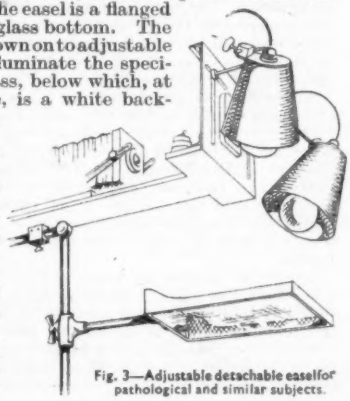


Fig. 3—Adjustable detachable easel for pathological and similar subjects.

Basic data of sensitive material, wattage, exposure, aperture and directions for the more orthodox "straight" clinical photography are outside the purpose

of these notes; they are as varied as the scope of the apparatus. I hope I may have stimulated medical photographers to take up this promising side of scientific record, and manufacturers to give us the tools with which to do the job.

I am indebted to Mr. Kenneth Heritage, FRCS, senior surgeon at St. John's Hospital, Lewisham, for his coöperation and for his permission to try this apparatus over his table.

HOSPITAL FOOD

II. WHAT IS GOOD FEEDING?

"The Cure of disease by means of diet is the most wonderful part of medicine."—CELSUS AD 30.

"Now good digestion wait on appetite and health on both."—SHAKESPEARE.

"All nutrition work, to be worthy of our present knowledge and opportunity, must stand four square upon equal recognition of calories, protein, mineral elements, and vitamins."—H. C. SHERMAN (1925).

"A dietary standard is an indication, not a rule."—ATWATER.

ENGLISH food has not always been a standing joke among foreigners. Our forebears ate handsomely, priding themselves on the variety of their dishes, and their ingenuity in seasoning them. The Normans brought their own cooking tradition with them; the Elizabethans were connoisseurs of the dressing of meat, game, and poultry, and their enthusiasm for the decorative trimmings of a meal gave us the good word "kickshaws." Even the Victorians ate solidly and well, and before the industrial revolution drove people into the slums of towns, cottagers' wives were cooks as notable as those still found in Scottish crofts. Our falling off in standards dates, it seems, from the last century, when many people became too poor to buy either good food or the equipment and fuel to cook it well. Cooking is an art handed from mother to daughter, and once the chain is broken it is hard to make a new beginning.

But if women have lost some of their pride in cooking, men have remained keen amateurs of good food; and when times become more normal could do much by judicious grumbling to raise the national standard. The workman's wife, for lack of means and training, may never become a fine or fancy cook, but in the interests of domestic peace she normally learns not to spoil the dishes she does tackle; and for this reason, among many others, hospital patients are particularly annoyed by the sight of good food wasted by bad cooking. They may be ignorant about dietetics, and chary of trying unusual foods, but this does not mean, as is sometimes alleged, that they are "not particular about what they eat." Within the range of foods they know they are exceedingly particular. And if they are to be introduced to new foods or methods of cooking these must be presented with first-class technique so as to overcome their initial prejudice against the unknown.

Assuming, then, that hospital patients take a serious critical interest in their food, how can we be sure of feeding them well?

FIRST BUY YOUR FOOD

The scientist approaches the subject of good feeding by experiment and calculation, and estimates the standard needs of people of different sex, age-group, and occupation. These he interprets in terms of food values. The caterer, on the other hand, may be chiefly concerned to produce meals which appear attractive, but unless he or she knows something of dietetics these meals may be unbalanced and incomplete.

If feeding was designed for a machine, the scientist's approach would be the one and only way to give satisfactory results; but good feeding for live men and women is a different problem. Each has his likes and dislikes and his choice of food is influenced by habit and custom, by the food's appearance and palatability, and the surroundings in which he takes it. The hospital ought to combine the scientist's knowledge of good feeding, with the caterer's art of producing appetising meals.

First the food must be bought. This is the caterer's job, and he or she can lose the fight in the first round by doing it badly. It is a mistake to make long-term contracts with firms, or to have a rigid system of buying. The caterer, like the good housewife, must have his eye on the market and buy what is good today. The best, from the hospital point of view, is not necessarily the most expensive. When cherries are plentiful they are cheap, and those at either the top or the bottom price can usually be ignored in favour of those at the average price of the market. Fruits like these, which are only in season for a short time, can be given often without provoking a charge of monotony: most people are glad to eat cherries freely while they can get them. Fish also should be bought with a weather eye on the market. The steamed cod of hospital tradition should be only one item in a repertoire of fish. Cod's roes, herring's roes, and sweetbreads are sometimes to be snapped up, for the patient on a high-protein diet. Apples—in war-time no longer perennial—should be exploited fully while they are in season, especially with the coöperation of the pastry-cook; apple-pie is almost universally favoured. The caterer must have as keen a nose for a fresh food in the market as a good reporter for news; this bloodhound quality can keep the whole hospital, staff and patients alike, curious about the next meal—an excellent mood for appetite.

But he must not only buy various foods—he must buy enough of them. This fundamental obligation, strangely enough, is one in which he quite often fails, usually because the hospital committee has not been able to free itself of too great a concern for economy in the kitchens. Before the war, perhaps, it was not always easy to say what was "enough" food: but nowadays, thanks to Lord Woolton and his collaborators, we have a yardstick. Rations represent roughly our basic dietetic needs. If a man is getting those, though he may not be overfed, he is not going short. This carries the corollary that if he is not getting his rations, or getting only part of them, he *is* going short. Yet it is the custom in many hospitals not to draw the full rations for patients—presumably because the full rations exceed the quantities of food which these hospitals were buying before the war. The inference is obvious, and so is the moral. The rations must be bought in full if patients are to be properly fed.

THE COOK'S PART

When enough good food has been bought, checked, and properly stored, it must be cooked; and those responsible for cooking should have some principles in mind: meals should tempt the appetite and please the palate; they should satisfy hunger, and be digestible; and they should be nutritionally adequate. Meals will tempt the appetite only if menus are properly planned, and if the preparation, cooking, and service of the food are well thought out. There must be no monotony, lest the patient loses interest, and with it appetite. If the food itself is varied it is not difficult to plan well. Variety should be introduced:

Weekly.—The meals on one day of the week should never be reproduced on the same day in the following week. It should no longer be possible to hear a patient recall a special day of a week because he had a certain dish on that day.

Daily.—The same dishes should not be served on two consecutive days; and there should be no similarity between two meals on the same day.

By studying consistence.—Mastication is important. A meal should not, except in special cases, consist of two soft dishes, such as mince followed by rice pudding.

By offering a choice.—No patient should go hungry because he does not like the dish of the day.

By considering the æsthetic sense.—A nice-looking plate of food stimulates gastric secretion, and hence promotes digestion. Colour can be introduced by the use of garnishes.

APPETITE

Appetite varies with different people. In hospitals two different groups of people must be catered for: one group is the staff, who are well, active, and hungry; the other the patients having "full diet," and those who are convalescent, and whose weight is being built up. The first group need bulky meals to satisfy their hunger, whereas the second group often require a high concentration in small bulk. Menus therefore must be planned to suit the type of person to be catered for.

Patients should get enough to maintain good nutrition. Loss of weight in hospitals is all too common, even in tuberculous patients awaiting admission to sanatorium. Meals must, of course, be planned to contain proteins

carbohydrates, fats, mineral salts, and vitamins in proper balance; and in order to achieve this it is almost essential to give three cooked meals in the day. But since the patient—especially the patient in bed—cannot digest the same type of meal as the healthy person who is leading an energetic life, the food chosen must be light, not stodgy. Food should be cooked sufficiently—not overcooked—and properly seasoned. The cook who lets dishes leave her kitchen without tasting them—or even smelling them (thus allowing food which has "gone off" to reach the patients)—is helping to maintain the bad reputation of "institutional meals." Soups should be varied; for example lentil soup and potato soup are not seen often enough in most hospitals, except by private patients. Brown vegetable soup is often a tedious routine.

Sauces for fish and vegetables give flavour and relish, and vegetables must never be watery and overcooked. At present, when citrus fruits are almost unobtainable and the vitamin C in the diet is largely derived from home-grown vegetables, special care should be given to the cooking of vegetables, and to the time they spend in the pot or on the hot-plate. It is not good cooking to prepare and boil the vegetables early in the morning so that they are ready to serve at 10.30 AM, and to keep them in a hot closet until lunch-time.

ELEGANT AND SMOKING HOT

Patients are tempted by food which looks attractive—true and trite. And not only patients: when the Sunday joint comes to table, all set about with bread sauce, gravy, and baked potatoes, the fine smell and the sight of the carving knife slipping lightly through it puts the family's gastric mucosa on its mettle.

Unfortunately in hospital the intimacies of the dining-table cannot easily be reproduced, and it is necessary to think of substitutes for this particular stimulus to appetite. One way is to present the food on a dish of appropriate shape and colour, and to garnish it agreeably; but this refinement is partly wasted if the patient has no chance to see it before it is served. Separate tarts or moulds often have more appeal than portions served from a large tart or mould. Salads should be served on separate plates, one for each patient, and if made dishes can be put into small separate pie-dishes so much the better. Finally, the food must be served with an eye for each patient's likes and dislikes; and this is the special province of the ward sister. If the patient in bed 5 is a clerk, perhaps rather fussy about his food, then she must be fussy too. If his neighbour in bed 6 is a hungry navvy, he must have the loaded plate his stomach craves. To most patients however, it is better to give a little, neatly served, and to make sure that they are offered second helpings. A nurse can take the trolley round and offer more to every patient, with a little personal encouragement for each.

Besides being pleasant to look at, food described as hot must be hot, and food described as cold must be cold. Tepid dishes have had no success in tempting the appetite of the sick.

CANADA

FROM OUR OWN CORRESPONDENT

IN considering applications for certification as specialists, the Royal College of Physicians and Surgeons of Canada has displayed a lenient attitude towards senior men who have been practising specialties but who have not acquired special diplomas; but it is less ready to register without examination the many applicants who are within a few years of graduation. Examining boards are not yet set up but it will not be long before they are established. The time has come to insist that the would-be specialist has taken pains to acquire a special skill.

The fellowship itself should be the best evidence of proficiency in general surgery, medicine, or obstetrics. At the recent annual meeting 10 fellowships were awarded *ad eundem*, 5 on passing the final examinations under the old regulations, and 5 on passing the regular tests. This is not the evidence of vigorous growth that friends of the college would like to see. Ten fellowships obtained by passing examinations is too small a number for any year. Opportunities for postgraduate study are increasing in Canada, and it might be expected that the fellowship would be a coveted reward.

In England Now

A Running Commentary by Peripatetic Correspondents

ON returning to the tropics after an interval of eight years, I was surprised at the change in the attitude of most Europeans to the sun. Formerly in Central and East Africa it was generally believed that to go out of doors without a topee before 4 PM—even on a cool or pouring wet day—was to court sudden death or at least serious mental derangement. Topees were also de rigueur inside tents, cars, and even buildings of insufficiently robust construction. The danger was thought to be not from heat but from some special "rays" only found in the tropics. Some few people, medical officers and others, questioned this view, but they were looked on as dangerous revolutionaries. There was indeed one senior official who had carried out his duties for many years with unusual drive and efficiency but seldom wore a hat, and he was sometimes cited by the newcomer in disproof of current theories. However, this did not defeat the old stager, who would say that although Dr. X *seemed* quite healthy, he was in fact very abnormal. When asked in what ways these abnormalities manifested themselves (for Dr. X seemed to be the sanest of men) the old stager would say: "He does all sorts of queer things—for instance, he goes out without a topee." Nowadays it is comparatively rare to see a topee being worn by a European, this type of headgear being almost entirely restricted to native clerks. Nevertheless the general health of European residents and of troops is probably better than ever before. The newcomer to the tropics is well advised to treat the sun with reasonable respect, but the difference between the radiation in tropical and temperate regions is clearly quantitative and not qualitative.

* * *

Another examination has come and gone, and as an examiner my first reaction is one of sympathy for the London student and his teachers. I surmise that work has been much disturbed by the flying bombs, and that clinical material is still appreciably restricted. Moreover, clinical teachers all over the country are tired and overworked, and steady leisurely teaching must be almost impossible. All too often the Finals candidate is at sea about fundamentals. Observation of simple clinical happenings is surprisingly at fault; the alæ nasi of the bronchopneumonic child are not noticed, Cheyne-Stokes breathing goes unrecognised, the heaving pulsation of an obvious aneurysm is not felt by the palpating hand. Cardiac murmurs are not timed, or if they are timed, more often than not they are wrongly and indeed impossibly placed. Physical signs in the chest are more than ever a mystery. As a result many Final MB candidates show themselves little less immature than students doing their terms of clinical clerking.

The vast majority of candidates seem never to carry out for themselves any clinic-room investigations. Practical familiarity with urine testing hardly exists. No doubt the sending of specimens to the clinical laboratory for report has relieved the student of any feeling of responsibility for making investigations of his own. "The presence of pus is made more certain," wrote one candidate in answer to a question on the white-cell count, "*by the return* (my italics) of a white-count of 25,000." This student is evidently not thinking of ever doing his own blood-counts!

One of my peripatetic colleagues has previously commented on the widespread inability to spell. Here are some mistakes which I noted in this examination: tubucolosis, classiffication, psycosis, infalable, falaceous, dillusional, vommiting, insensative, distroyed; "a dirty hurd of cows"; "the embryo burroughs its way through the intestinal wall and reaches the liver" (where presumably it receives a cold wellcome). I notice a surprising increase in the use of abbreviations, even to the extent of writing R for "treatment," and D for "diagnosis." The student should remember that even though life is short and the art fleeting, the poor ignoramus of an examiner may be unable to interpret his cryptic letters. EOM, for example, stumped me completely: I could think only of "external orditory meatus," which in the context seemed inappropriate. Hedging and ditching are always with us. The student seems terrified to commit himself. "In

PRINT IN BINDING

acute cholecystitis, there may be pain": "prolonged boiling of milk tends to destroy vitamin C": "acute bacillary dysentery may be accompanied by diarrhœa."

One or two outstanding delights were noted. Discussing the diagnosis between the coma of drunkenness and that due to illness, one candidate wrote "The breath may smell of stale alcohol. A smell of fresh alcohol may indicate that the man may have felt ill before becoming unconscious, and took a little alcohol beforehand"—a useful fellow, this, for a police surgeon's job. Another suggested that "the patient must be red-educated" ("in Moscow, I presume," commented my co-examiner). "The large cyst," wrote another, "forms many daughter tæniæ which are called scolioses." One student thought that dogs deposited ova of *T. echinococcus* via the urine on to lamp-posts, from which the human being got his infection.

In the clinical part of the examination, many students are like those witnesses in court who have a story to tell and who are determined to tell it in all its details and irrelevancies. They waste precious minutes of the all-too-short time which the examiner wishes to use for finding out what the student knows and so help him to get through to qualification. "Just give me the salient facts about this patient, and don't worry about the things that do not matter," says the examiner: but the candidate pores over his little sheet of notes and explains that the patient has yellow hair, lives at Putney, does her washing on Tuesdays because her daughter from Twickenham leaves the baby with her on Mondays, and seven years ago scratched her right arm when she was blackberrying in the country. You understand this urge to get the story right in every detail, and you sympathise: nevertheless, you wonder whether your examinee can assess the important facts in the history and in the examination of the patient

To those who have anything to do with the preparation of the student for his Final, I would give this advice:

(1) For some weeks before the examination, take him often to the bedside and make sure that he can observe and examine a patient. Students do not fail because they cannot localise a cerebral tumour or detect the passing of a benign hypertension into the malignant hypertensive phase. They come down because they miss a gross falling in of one side of the chest or a dextrocardia due to fibrosis of the lung; because they cannot detect an obviously enlarged liver or spleen, or time an easy cardiac murmur, or feel a well-marked collapsing pulse. A student who shows that he understands the significance of the history and symptoms of the case and can elicit correctly the physical signs is likely to do well even when he fails to make a clear-cut diagnosis.

(2) Make sure that the student has practical experience of the usual side-room investigations. The examiner in a qualifying examination is much more interested in whether the student has a working knowledge of albuminuria or glycosuria, whether he is aware of the practical snags which may arise, than in what he knows theoretically about the van den Bergh reaction or the electroencephalogram. He feels that the student ought to be familiar with the appearances of sputum in the sputum cup, or with elementary observations and tests on the fæces.

(3) Reassure the student that examiners are cheered up when they meet any evidences of "clinical nous"—for example, if in discussing a patient the candidate picks out the four or five salient points in the history, or links up the absence of a presystolic murmur with auricular fibrillation.

* * *

Pongo-Pongo is not the only place demanding intermittent or preferably regular indulgence in alcohol for the maintenance of reasonable health and a temper of workable equability. The steamy heat of Beira in Portuguese East Africa requires a litre or two of light Danish lager at midday and some five or six double whiskies after sundown. When I was there I asked a Portuguese colleague why this should be so. He was a brilliant if daring surgeon who once excised a kidney on board ship with no more tools than the ship's butcher could provide. Years later, to his extreme surprise, he met his patient sturdily tramping the streets of Capetown. On this alcohol question he agreed there was no special nutritive or medicinal quality in alcohol likely to account for the facts. He thought its effect on the mind was the important factor. "We live here in a little group," he explained, "we meet the same few people and see the same faces every day and we are bored. The night dose of alcohol releases the inhibitions just enough to make us pleasant company and so helps to maintain a good mental tone. Nothing encourages the invading germ like low mental tone." Our discussion took place over a glass after the funeral of the manager of a local shipping firm. The firm's proprietor was a staunch teetotaller and insisted that his managers should be teetotallers too. His Beira branch—the only one in the tropics—had the reputation of being the unluckiest branch in the firm. "In this country," said my Portuguese friend, "teetotallers die first and drunkards next, but the moderate drinker often lives to a good age."

On Active Service

CASUALTIES

DIED OF WOUNDS

Captain ANTHONY DESMOND FISK, MB CAMB., RAMC

WOUNDED

Captain J. H. BENNETT, RAMC
Lieutenant R. BRIGGS, RAMC
Captain N. G. D. CAMPBELL, BM OXFD, RAMC
Captain S. M. P. CONWAY, MC, LRCPI, RAMC
Captain J. C. F. CREGAN, MRCS, RAMC
Captain N. C. ROGERS, MB LOND, RAMC
Captain J. SCOTT, RAMC

DIED

Major BARNETT FREEDMAN, MRCS, RAMC

AWARDS

MENTION IN DESPATCHES

The following RAMC officers have been mentioned in recognition of gallant and distinguished services in Italy:

Brigadiers.—J. J. Magner, MC, J. G. Morgan, OBE.

Colonels.—C. B. C. Anderson, OBE, A. Angus, J. T. McOuat, OBE, R. M. Savege, OBE, MC, C. H. K. Smith, OBE, MC, J. R. N. Warburton, MC, G. G. Drummond.

Lieut.-Colonels.—J. H. Ward, DSO, MC, W. A. Ball, W. S. Brindle, H. A. Brittain, J. D. Easton, OBE, W. Graham, L. J. Haydon, L. G. Irvine, D. MacD. Lyon, D. M. Mitchell, W. Patrick, G. W. Molyneux, E. F. S. Morrison, MC, J. J. O'Connell, OBE, J. Pyle, MC, J. H. Sangster, A. Wilcox, P. H. Wood, N. G. G. Talbot.

Majors.—S. S. Chesser, S. Alstead, A. H. Baker, E. L. Carter, F. A. Denz, J. F. Ford, E. M. Griffin, W. F. Hamilton, W. A. Heggie, MC, C. C. Hurst, D. B. Jagger, D. Jefferiss, R. C. Little, J. C. MacKillop, B. J. Malley, D. Matheson, J. M. McKiddie, J. D. N. Nabarro, A. I. Ross, H. M. D. Shepherd, N. J. Y. Simpson, A. Stuart, H. Waters, W. R. West-Watson, MBE, J. H. Whittles, E. G. Wright.

Captains.—H. Auger, E. Batley, O. H. Belam, C. Cameron, J. W. M. Christie, T. B. Davidson, K. B. Dawson, D. C. Devine, G. F. Edwards, MBE, J. T. A. Essex, C. Giles, S. J. G. Gilmour, R. T. Grime, A. Henderson, A. W. F. Heron, E. W. Lindeck, J. G. Macarthur, MC, D. Macdonald, J. McLean, L. F. McWilliams, F. E. Milson, A. E. Rampling, E. M. Sewell, J. M. M. Steven, M. G. Sutton, R. T. B. Watson, C. W. M. Whitty, M. Wirtheim.

Lieutenants.—C. Creffield, F. B. Lee, R. C. Medland.

MEMOIR

Captain F. MURRAY WAINMAN was killed by enemy air action near Falaise in Normandy during August. Born in 1916, the younger son of Mr. F. J. Wainman of Glasgow, he was educated at Glasgow High School and University, graduating in science in 1936 and in medicine three years later. After six months as house-surgeon at Glasgow Royal Infirmary he joined the RAMC in 1940, and a year later was posted to Egypt. He served with the Eighth Army in North Africa and in Italy until the end of 1943. Tall and well built, Murray Wainman's quiet unassuming manner hid an adventurous spirit. Essentially a man of action, he was posted at his own request to an armoured regiment soon after he joined up, and he earned the admiration of his men and unit by his coolness and daring while attending the wounded under fire. As a boy and as a student he was keen on yachting and rugby football, and after leaving school he played for Glasgow High School FPs.

Yorkshire Post

"... So long as we permit the sale of combinations containing anywhere from 7 to 10 different vitamins and 5 to 8 different minerals in a single pill, with the hope that something in the mixture will hit something that the patient has, we are getting farther and farther away from scientific medicine."—Dr. MORRIS FISHBEIN, *J. Amer. med. Ass.* 1944, **126**, 759.

Public Health

SOME OBSERVATIONS ON SCABIES AND ITS TREATMENT

HORACE A. NATHAN, MRCS, DPH
MEDICAL OFFICER, EPSOM AND EWELL BOROUGH COUNCIL

SCABIES is often regarded as a war disease. But for some years before this war the annual reports of the Chief Medical Officer of the Board of Education drew attention to a rising incidence among school-children.

AGE-DISTRIBUTION AND SYMPTOMS

Two scabies clinics were set up in Epsom and Ewell in 1942.

At clinic A 516 cases (178 males and 338 females) were treated in the year ending Aug. 7, 1943. At clinic B 294 cases (105 males and 189 females) were treated in the year ending Sept. 22, 1943. The charts classify the cases by age and sex.

The preponderance of females is striking. At the higher ages this might be explained by war conditions, and the closer association of females with young children in the home. At the lower ages, the sex difference is much smaller, but the figures do not justify any general conclusion.

The impression I have formed is that infection takes place among school-children, who carry it home to their families. In the last war men used to contract the condition in the trenches and then take it home; but now the father is infected on leave. Some authorities have shown that the disease is often of venereal origin, but there is no evidence of this in the series of cases described here. Eruptions on the thighs and external genitalia have been unusual.

Having previously spent 16 years in general practice, I would say that scabies seems to have changed its type during this war. I have often seen it without apparent burrows or vesicles, but with only a few sparse reddish spots—which cause great irritation at night—denoting the presence of the sarcoptes. In these cases, the webs of the fingers and toes seem to be free and the eruption has no particular distribution. Moreover, the periods of greatest incidence do not coincide with summer or winter but with attendance at school. During the term the health visitors make their survey and children are regularly sent to the clinics for medical opinion. Many

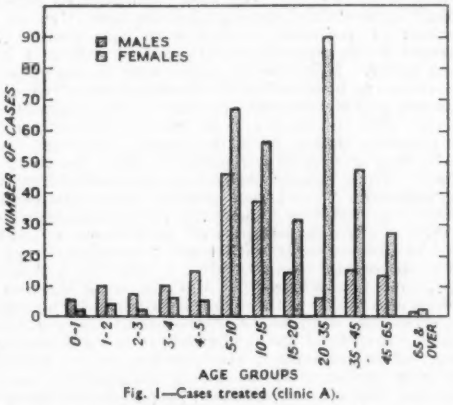


Fig. 1—Cases treated (clinic A).

of these small patients show few signs—perhaps only a grimy burrow—in the web of a finger or at the wrist. Others may have impetiginous areas at the buttocks which do not appear to be scabies; but in the male a few papules or skin lesions on the penis aid diagnosis. The skin of the abdomen is a common site for scratched and unscratched papules. Although the folds of the axilla, especially anteriorly, often show spots, no special part of the body surface can be properly defined as a diagnostic area.

The detection of the disease has become more difficult, and all types of skin lesion, including impetigo, are suspect. All cases must be carefully examined, and one is sometimes fortunate in tracking down an odd burrow, hitherto undiscovered, and later in picking out the acarus. So varied are the skin lesions, scratched and unscratched, that I am coming to believe that every patient complaining of severe skin irritation in bed should be offered treatment.

DIAGNOSIS AND TREATMENT

In doubtful cases itch mites are sought with the point of a needle. The mites are then examined microscopically: the suspected speck is mounted on a slide with a drop of 'Lactophenol' (BDH 20% phenol) and the mites seem to swell up and show clearly.

All patients are bathed with hot water, and carbolic soap is liberally applied. They are thoroughly dried, are painted with a preparation of benzyl benzoate emulsion made up with 'Lanette" wax SX (Mellanby and Johnson 1942), and are given clean underclothing. After 48 hours they are again bathed and repainted; again clean underwear is put

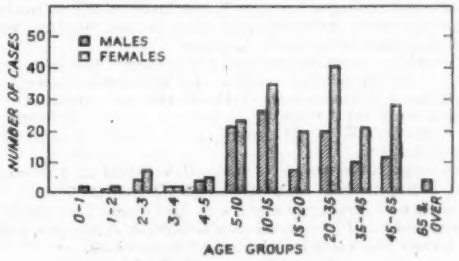


Fig. 2—Cases treated (clinic B).

on, and they are told to apply, night and morning, a powder consisting of equal parts of zinc oxide, starch, and boracic acid. Powdering is continued for a week, after which they are inspected by the medical officer; the lesions are then found to be quite pink, and in another week they become small brown scabs which dry and fall off.

No patient in this series has developed dermatitis while receiving benzyl benzoate treatment only. Two did complain of smarting thigh rashes but they had been treated elsewhere with sulphur. After their second treatment, on the lines set out above, they cleared up without further trouble.

FOMITES AND REINFECTION

The Ministry of Health Memorandum (1940, 1942) did not recommend the disinfection of clothing, although MacCormac (1943) considers that infection may be derived from blankets and bedding. In the routine of our clinics all patients are instructed to wash their underwear and sheets with carbolic soap, which is distributed free by the public health department. The blankets are aired by hanging them up for a whole day in the patient's garden or backyard. In a few cases where reinfection occurred patients arriving for further treatment, some weeks later, were told to have their bedding and blankets ready so that they could be called for and steam-disinfested.

Reinfection was often traced to refusal of treatment by one member of a family because he was not yet suffering from skin irritation; when his itch mites had incubated, he reinfested the rest of his household. It was seldom necessary to treat a person a third time in order to clear up skin eruptions; only half a dozen cases in the whole series required a third treatment. In obstinate cases, where a particular part of the body, such as the hands, did not clear up, one extra painting on that part has been found successful, even without the washing in hot water. Treatment by one application, as recommended by Graham (1943), did not clear cases satisfactorily; indeed, itch mites isolated after treatment were found to be alive and therefore capable of reproduction.

ADMINISTRATION OF CLINICS

Clinics are held daily and all contacts are treated whether showing eruptions or not. Anyone complaining of irritation at night is presumed to need treatment.

A special register is kept of the name, address, age, occupation, and dates of treatments given to patients, inspections being noted in a special column. Reinfections

PRINT IN BINDING

are filled in with red ink. The environment of each reinfected patient is carefully investigated. A consent form must be signed by the patient or (if he is under 16) by the parent or guardian. All particulars are copied on a card (following the routine practice used for infectious fevers), and sanitary inspectors are instructed to call at the patient's house to make all necessary inquiries. Should patients not arrive for treatment regularly, or should the contacts fail to appear, the sanitary inspector or health visitor is instructed to follow up by further visits. It has never been found necessary to compel treatment by invoking the Scabies Order, 1941.

Some of the views in this paper may differ from those now current; but they are based on the observations made in this limited survey. On examining further cases and figures for the months following those covered here, I found no reason to vary my conclusions.

SUMMARY

Experience at two scabies clinics suggests that the disease has changed its type in the last few years, making diagnosis more difficult, and that it has become more prevalent among school-children.

Females, especially adults, are possibly more susceptible to infection than males. In this series there were many more females, especially in the age-groups 15–20, 20–25, and 35–45 years. Among school-children in the age-groups 5–10 years and 10–15 years, girls preponderated.

No cases of dermatitis have developed in this series after benzyl benzoate treatment.

I wish to express my thanks to Dr. Cyrus Ive, MOH for Epsom and Ewell, for permission to publish this paper, and to Sir Arthur MacNalty for his helpful suggestions.

REFERENCES

Graham, J. R. (1943) *Brit. med. J.* i, 413.
MacCormac, H. (1943) *Ibid*, ii, 667.
Mellanby, K., Johnson, C. G. (1942) *Ibid*, ii, 1.
Ministry of Health (1940) memo 229, revised 1942.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED JAN. 6

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1462; whooping-cough, 1538; diphtheria, 439; paratyphoid, 1; typhoid, 8; measles (excluding rubella), 11,947; pneumonia (primary or influenzal), 1242; puerperal pyrexia, 124; cerebrospinal fever, 49; poliomyelitis, 3; polio-encephalitis, 2; encephalitis lethargica, 0; dysentery, 204; ophthalmia neonatorum, 63. No case of cholera, plague, or typhus fever was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on Jan. 3 was 961. During the previous week the following cases were admitted: scarlet fever, 53; diphtheria, 17; measles, 71; whooping-cough, 24.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 13 (0) from measles, 15 (0) from whooping-cough, 14 (0) from diphtheria, 41 (6) from diarrhœa and enteritis under two years, and 55 (9) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 4 fatal cases of whooping-cough. Liverpool and Leicester each had 4 deaths from influenza.

The number of stillbirths notified during the week was 224 (corresponding to a rate of 28 per thousand total births), including 20 in London.

ELLA SACHS PLOTZ FOUNDATION.—During the 21st year of this foundation for the advancement of scientific investigation 27 applications for grants were received, of which 19 came from the United States and 8 from five different countries in Europe, Asia, and South America. The total number of grants made during the year was 18. Grants are made to researches in medicine and surgery. They may be used for the purchase of apparatus and supplies needed for special investigations, and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators are granted only under exceptional circumstances. The maximum grants will usually be less than $500, and applications for the year 1945–46 should be sent before April, 1945, to Dr. Joseph C. Aub, Massachusetts General Hospital, Fruit Street, Boston, Mass., USA.

Letters to the Editor

WHO SHOULD FEED THE SICK?

SIR,—In your leading article of Jan. 6 you assert that "improper social distinctions have crept into hospital feeding," that "officers may have good food at the expense of other ranks... who do not always get enough," and that "'surplus' rations from the public wards may be used to make sweets and puddings for the private patients' supper." As these are grave charges which have already been quoted in the public press, and are seriously calculated to promote social discontent, it would be interesting to know on what evidence they are founded.

Streatley, Berks. ROBERT HUTCHISON.

*** "Full diet" patients in general wards do not always receive their full ration: thus in three hospitals mentioned in the King's Fund report the fat issued daily averaged 45, 35, and 47 g. instead of 77 g. In some hospitals jam, marmalade, butter, and bacon seldom or never appear in the public wards, but are regularly given to private patients and officers. Competent observers have no doubt that abundance in one part of the hospital is sometimes related to scarcity in the other part. Our own purpose will be served if our readers make certain that these "grave charges" cannot be sustained against the hospitals with which they are connected.—ED. L.

TREATMENT OF DIPHTHERIA

SIR,—I desire not to fan but rather to quench the embers of this old controversy about the dosage, and methods of dosage, of diphtheria antitoxin. "Dosage," wrote Claude Ker long ago, "must be decided by observation of results in actual cases, and these results, after all, in spite of statistics, must be a matter of personal opinion." Since it is the basis of the free practice of medicine, this is a view with which no clinician will quarrel. Nevertheless, personal opinions may be modified, as the years pass, as the result, for example, of improvement in the therapeutic weapons provided by laboratory research-workers or the laying by them of old bogies. My personal opinion, already expressed, here and there, in print, is that it is rarely necessary to exceed a single dose of 50,000 units of antitoxin provided part or whole of the dose is injected intravenously. I thus agree substantially with the suggestion in your leading article. I must add that my opinion as to the upward limit of dosage has been influenced by personal clinical observations during the last few years of the progress of patients treated with the current disaggregated (enzyme-digested) sera to which I refer again below. Much of the controversy turns upon the importance to be attached by the clinician to "avidity."

Glenny and Barr[1] point out that "it was suggested as early as 1900 by Roux and in 1904 by Cruveilhier that the curative power of a diphtheria antitoxic serum (DAS) was not solely dependent upon its antitoxic value." There was not only a quantitative but a qualitative value and "the term 'avidity' was introduced by Kraus" to indicate "firmness of combination with toxin." *Individual* samples of DAS vary in avidity. Some combine loosely with toxin "forming complexes which dissociate considerably on dilution" (Glenny, Pope, and Waddington[2]). Methods were devised by Madsen and his co-workers and by Ramon by which the properties of samples of DAS might be compared. Into the details of these methods it is unnecessary to enter; they are outside the province of the clinician, who only needs to know (what, apparently, some do not) that "batches of antitoxin prepared for clinical use are blends obtained from a number of different horses" and "that such blends make it probable that the avidity has little practical importance" and "is of no importance at all if each constituent of the mixture has a correct in-vivo/in-vitro ratio" (Glenny and Llewellyn-Jones[3]). If, for clinical purposes, avidity can be discounted, so also, logically, can "intensive therapy" in the sense of repeated doses. An additional dose, rather than repeated doses on the instalment system, is called for when it has become clinically manifest

1. Glenny, A. T., Barr, M. *J. Path Bact.* 1932, **35**, 91.
2. Glenny, A. T., Pope, C. G., Waddington, M. *Ibid*, 1925, **28**, 279.
3. Glenny, A. T., Llewellyn-Jones, M. *Ibid*, 1931, **34**, 110.

that the first dose was under-assessed, and—since time is vital in the treatment of diphtheria—it should be given intravenously, especially if the first injection was intramuscular. On the other hand, it is often not realised that choice of the intramuscular route implies recognition of the fact that no *effective* concentration of antitoxin in the blood-stream will occur for many hours. How often has one seen the premature injection of a second dose of antitoxin by the intramuscular route six or eight hours after the first because no obvious clinical improvement was manifest after this short interval! However, as Osler wrote, "the danger is in giving too small and not too large a dose."

So far, your correspondents have not referred to what I consider to be an outstanding achievement in the preparation of DAS which has not only laid the bogy of serum reactions but has also in my opinion justified the employment of smaller doses than were called for in the days of the older salt-precipitated products. The disaggregated sera of Pope [4] [5] have been used in my wards since their introduction. I am satisfied that this refined DAS has, apart from its freedom from foreign proteins, all the other advantages in the clinical field that it was shown to possess in laboratory trials by Glenny and Llewellyn-Jones [6]; inter alia, it is "absorbed more rapidly and eliminated more slowly" than salt-precipitated DAS. Hence in large part is due my agreement with the opinion expressed in your leading article.

London, N15. E. H. R. HARRIES.

AMŒBIASIS

SIR,—Dr. J. Graham Willmore is in error in attributing to me the conception or the use of the appellation "Liverpool" treatment for amœbiasis. I myself have never employed this designation, which I heard for the first time at the discussion on amœbiasis at the Royal Society of Tropical Medicine. I there understood it to refer to one course of "combined" treatment employed here for many years, the details of which I supplied, at their request, to the Service authorities who wished to try it out in conjunction with other courses of treatment for chronic amœbiasis. This particular course was elaborated by my late colleague, Prof. Warrington Yorke, and myself between 1926 and 1930, and originally was founded on one described by Willmore and Martindale in 1926. It was subsequently modified and now differs only in minor respects from the course later elaborated by Dr. Willmore, as he rightly points out; it is one of several such "combined" treatments which are at present used in Liverpool in an endeavour to eradicate chronic amœbic infections of the gut. For none of these courses is any claim of fundamental originality made.

Liverpool School of Tropical Medicine. A. R. D. ADAMS.

DEATH AFTER INTRAVENOUS NEPTAL

SIR,—I was interested to read Dr. Rennie's description of another sudden death after intravenous 'Neptal' (Jan. 13, p. 53). Considering the widespread use of the drug, the number of toxic manifestations reported is extremely small, but I wonder whether severe and sometimes fatal reactions are not occurring with greater frequency than is commonly assumed.

During the last three years I have witnessed 4 deaths after the intravenous injection of two c.cm. of neptal and 3 severe general reactions from which the patients recovered. The patients were all suffering from congestive heart-failure with marked œdema and effusions into the serous cavities. The clinical picture resembled that described by Dr. Rennie. One to three minutes after the injection the patients became distressed and dyspnœic. They lost consciousness and looked pale, cyanosed, and shocked. Distension of the cervical veins was noticed. There were a few convulsive movements, the pulse became imperceptible, and the patients died about five minutes after the injections. In the less severe reactions the patients made a complete recovery. An autopsy was done in 3 cases. They all showed well-marked engorgement of the right side of the heart with distension of the big veins, and the lungs were dark and congested. The kidneys in 2 patients were abnormal. In the first they were small and contracted, typical of chronic nephritis. In the second they showed evidence of acute glomerular nephritis—the œdema which had been thought to be due to chronic rheumatic heart disease had been of renal origin. Two of the patients had had no previous injection of neptal, so acquired sensitivity to mercury is unlikely to be the cause of these severe reactions. The clinical picture is very much like that observed in anaphylactic shock. Neptal may further damage abnormal renal tubules and lead to the sudden setting free of a histamine-like H-substance which will cause the unexpected death.

Essex County Hospital, Wanstead. E. FRANKEL.

TRACHOMA AND SULPHONAMIDES

SIR,—In his letter in your issue of Dec. 30, Major MacCallan expressed the view that sulphonamide medication is ineffective against the virus of trachoma. During the past 6 years I have used sulphonamides extensively, both internally and by local application, in the treatment of trachoma. Internally the amount given was ½ grain of sulphanilamide per lb. body-weight during the 24 hours. This dosage was continued for 14 days, and for a further 14 days half the amount was administered daily. I am in complete agreement with Major MacCallan that sulphonamides have no effect on the virus of trachoma. In my opinion it is their beneficial effect on the secondary infections so often associated with trachoma which has led other people to conclude that a curative effect has been obtained upon the trachoma itself. Dramatic alleviation of distressing symptoms due to a secondary infection, such as photophobia, can be produced. It is because of this that I have continued to use sulphonamides, but while doing so I have come to realise that they were having no effect on the trachoma per se. In order to prove that the sulphonamides were effective against the virus of trachoma it would be necessary first to discover the presence of inclusion bodies in particular cases, and then demonstrate their disappearance after a course of sulphonamide therapy.

Dublin. F. S. LAVERY.

IN WHICH WE MIGHT SERVE

SIR,—Dr. Batten's point that the Board of Admiralty has powers far exceeding those of the proposed Central Health Services Council may well be true; but Admiral of the Fleet Lord Chatfield has given his considered opinion that the Board of Admiralty, lacking as it does the right to present its advice direct to Parliament, has been powerless to warn the public of the appalling danger in which it stood from 1932 to 1939. He advocates the setting up of a Defence Committee with direct access to Parliament. If politicians have shown such irresponsibility in the past in the life-or-death matter of national defence, it would hardly seem prudent for the medical profession to submit itself to a politician—that is to the Minister of Health—without the safeguard of an advisory committee having the right of publishing its report to Parliament year by year.

Bridlington. P. D. H. CHAPMAN.

MEDICAL FILMS

SIR,—Your readers interested in rabies may like to be reminded that there is a film containing a case-illustration of a boy affected with this disease. It shows well the apprehensive facies, the clarity of mind, the reluctance to drink, and the spasm of face and neck muscles. The film may be hired from the Kodak Medical Film Library, Kingsway, London (16 mm. silent). We would like to receive information from anyone overseas (or in Britain) who knows of other films of this disease.

In the review of Russian films (Jan. 13, p. 69) you talk of the picture "jigging about the screen all the time." This defect may arise in a variety of ways. If the camera is unsteady while the picture is being taken—for instance, if it is held in the hand or on a loose tripod-head—the movement of the picture on the screen will be a relatively slow one, and up-and-down or rotary; this is known as "weaving." But if the pull-down mechanism in the camera, or more rarely in the printer, is worn, the movement of the picture on the screen will be a quick one,

4. Pope, C. G. *Brit. J. exp. Path.* 1938, **19**, 245.
5. Pope, C. G. *Ibid*, 1939, **20**, 132, 201.
6. Glenny, A. T., Llewellyn-Jones, M. *J. Path Bact.* 1938, **47**, 405.

and up-and-down only; this is known as "jittering." If these defects are present on the original record nothing can be done to improve them, but if only on the release print a new print can be made which will remain steady on the screen.

S. J. REYNOLDS,
Hon. Sec., Medical Standing Committee,
Scientific Film Association.
London, SW7.

THE TYPHOID-SALMONELLA GROUP

SIR,—In your issue of Dec. 30 Capt. J. F. Goodall reports a case in which a primarily inagglutinable strain of *Bact. typhosum* was obtained by blood-culture from a very ill patient. Such cases are not very rare. The atypical behaviour is not always due to a Vi antigen, but may be attributed to some—so far unidentified—protective covering developed by typhoid bacilli, and perhaps other organisms, in the human blood-stream.

Many years ago I isolated an organism giving cultural reactions of *Bact. typhosum* from the blood of a patient with symptoms resembling enteric fever. This organism agglutinated to titre with BW & Co. antiserum but not with MRC serum from the Oxford laboratory. A sealed agar slope of the organism, with a bottle of the erring serum, was sent to Prof. A. D. Gardner, who reported that by the time they reached him (some six weeks in transit) the organism agglutinated perfectly with the serum. This was before the Vi materials became generally available. Several other strains with aberrant behaviour were isolated—always from blood-cultures—and all "came into the fold" after prolonged subculture. (We used to call these strains *B. assidi* after the laboratory assistant, Ali Hassan Assidi, who made the first isolation.)

Recently *B. assidi* again appeared in a blood-culture from a (clinically) typhoid patient. This strain gave the cultural reactions of *Bact. typhosum* but would not agglutinate with MRC or BW & Co. sera, nor with the serum of the patient. We tried the culture with Felix's antityphoid serum (Lister Institute), which is supposed to contain Vi agglutinin, and the blood of the patient with the Vi suspension supplied by the MRC, all results being negative.

This experience is worth recording since clinicians often try to "hustle" laboratory-workers with the object of provoking premature disclosures. In these atypical instances the laboratory-worker is within his right to refuse a definite opinion until the strain in question comes into line. This attitude often infuriates the clinician, but a suspension of judgment cannot be unknown in normal clinical practice, and "a fellow feeling" (all too rare) should make the impatient clinician "wondrous kind."

FRANK MARSH,
Pathologist, Anglo-Iranian Oil Co., Persia.

Obituary

WALTER ESSEX WYNTER

M D LOND., F R C P, F R C S

Dr. W. Essex Wynter, consulting physician to the Middlesex Hospital, died at Newbury on Jan. 4, in his 85th year. Unusually gifted, but lacking in ambition, he early gave up his practice and hospital appointments in London to spend a happy and active retirement at Bartholomew Manor, his 14th century home, where he grew his own tobacco and brewed his own mead. Here he and his wife spent skill and time on the intelligent repair of the manor and its cottages, some of which soon became the homes of retired Middlesex nurses. And in 1926 with discriminating generosity Dr. Wynter offered the manor itself, with an endowment for its upkeep, on the death of his wife and himself, to the hospital for the same kindly purpose.

The son of Andrew Wynter, MD, who practised in Chiswick, Walter Essex was educated at Epsom College and at the Middlesex and St. Bartholomew's Hospitals. He qualified in 1885, and when he took his MB with honours in 1887 he had already been a fellow of the Royal College of Surgeons for two years. He was elected FRCP in 1897 after he had already been for some years physician to the Middlesex Hospital and lecturer in medicine in the medical school. Though at heart a physician, and a physician with a flair for diagnosis, his interest in surgery continued, fostered by his intimate friendship with Bland-Sutton, and he made a point whenever possible of watching the operations on his own patients. His surgical colleagues too found him ready with apt suggestions, which he himself rarely bothered to follow up. For instance he suggested lumbar puncture, on anatomical and physiological grounds, some time before Quincke's work made this a routine diagnostic and therapeutic measure. At the Royal Society of Medicine in 1914 he described the results of splenectomy in acholuric jaundice, an operation undertaken by Bland-Sutton at his suggestion. He wrote but little, his series on *Minor Medicine* which first appeared in the *Middlesex Hospital Gazette* was published as a book in 1907 and his *Manual of Clinical Pathology* in 1890. His disinclination for private practice was not due to indolence, for he was assiduous (though not always punctual) in his hospital attendance, and he carried his interest in his patients into retirement, where he gave generously of his counsel and time to his colleagues and to the Newbury and District Hospital.

"With Wynter's logical reflective mind," writes R. A. Y., "went a keen almost intuitive aptitude in the diagnosis of difficult medical problems. He had a most attractive gentle personality with a kindly sense of humour—which endeared him to his colleagues and to all the students and residents who worked with him. He ambled through life unhurried, unperturbed, and serenely absorbed in the enjoyment of his interests and his hobbies, among them fly-fishing of which he was an enthusiastic devotee. He certainly adopted Shakespeare's advice to 'fling away ambition'; perhaps that is why he was one of the happiest men I ever knew."

Dr. Wynter married Miss Ada Wills, of Bristol, who died in 1937.

JOSEPH GRIFFITHS

CMG, M D EDIN., M CHIR CAMB., F R C S, D P H

FROM 1887 until his death on Jan. 4 Dr. Griffiths spent his life in Cambridge. The son of a farmer at Ponthenry, Carmarthenshire, he was born in 1863. At Edinburgh, where he received his medical education, he was Murchison scholar and graduated with honours in 1885, taking his MD with gold medal five years later. He became assistant to the professor of pathology at Edinburgh, and his first post at Cambridge was likewise in the pathology department. Soon however he was combining the appointment of pathologist to Addenbrooke's Hospital with that of assistant to the professor of surgery, Sir George Humphry, and in 1892 he joined the surgical staff of the hospital. When Humphry died Griffiths became university reader in surgery and examiner in surgery; but after seven years he resigned his readership because he thought the school should again have a surgical chair. "During this period," writes H. B. R., "he added a large number of pathological specimens to the museum, especially bone preparations, having evolved, with the assistance of his laboratory assistant, Frederick Izzard, a method of maceration which produced beautifully white specimens of bone diseases which were the constant admiration of generations of surgical examinees. He also had a large private collection which he presented to the Royal College of Surgeons." He wrote chiefly on bone and joint injuries and on urogenital disorders, especially prostatic enlargement; and in 1895 he delivered three Hunterian lectures on the testis.

During the war of 1914–18 Griffiths commanded the 1st Eastern General Hospital, with the rank of colonel. This unit was mobilised at Cambridge the day after war was declared, and finally occupied open-air huts on the King's and Clare cricket-ground. "The open-air ward was Colonel Griffiths's own idea, and was thought by many to be too spartan; but it proved of undoubted benefit to the patients." For his war services he was appointed CMG in 1918.

As a young man Griffiths was a keen follower of hounds, and in later life his hobby was farming; he also took a keen interest in animal pathology. Besides his Addenbrooke's appointment, he was consulting surgeon to the Huntingdon County Hospital and the St. Leonard's Hospital, Sudbury.

THE LATE MR. WALTERS

Professor Rendle Short writes: The Bristol Royal Infirmary has for many years been one of those happy hospitals where the surgeons have been able to maintain constant friendly relations with one another, and this comfortable atmosphere has been largely due to the character and influence of C. F. Walters. Until the war came to upset the routine, it was the custom for all the surgeons to meet every Friday, with the residents and students, to give an opinion on four or five cases, shown either because they were of special interest, or because the diagnosis or treatment presented some problem. The junior surgeon gave his opinion first and the senior last. Walters was in his element on these occasions; always sound and sensible; never trying to score off his colleagues; always friendly and helpful.

The son of a chartered accountant, he came to the Bristol Medical School in 1895, qualified in 1900, and was appointed assistant surgeon to the Royal Infirmary in 1909. He took a special interest in bladder and prostate cases, and as the assistant surgeon had very few beds and opportunities of clinical experience were limited, he made ingenious model bladders on which to practise cystoscopy. Always obliging, hard-working, and good-tempered, he was a most congenial colleague, and well liked by his patients. In 1916 he was sent to France, and became surgeon to a specially advanced casualty-clearing station for abdominal injuries on the Somme front, as near the firing line as possible, so that cases might be operated on without delay. The series of 500 emergency operations for abdominal wounds, described by Walters and his associates in 1917, was one of the largest and most successful treated during the war.

He married Gertrude Popham in 1905 and leaves a son and three daughters.

Births, Marriages, and Deaths

BIRTHS

ASHBY.—On Jan. 9, at Bolney, near Haywards Heath, the wife of Captain Michael G. Ashby, RAMC—a daughter.

BALL.—On Jan. 8, at Hunstanton, the wife of Major P. H. Ball, RAMC—a daughter.

FISK.—On Jan. 6, at Birkenhead, the wife of the late Captain A. D. Fisk, RAMC—a daughter.

GOFFE.—On Jan. 10, the wife of Dr. A. P. Goffe, of Deodar Road, Putney—a son.

GORDON.—On Jan. 10, at Walton-on-Thames, the wife of Surgeon Lieutenant K. G. O. Gordon, RN—a daughter.

HOWAT.—On Dec. 29, in London, the wife of Dr. Douglas D. C. Howat—a daughter.

KEATINGE.—On Jan. 11, at Winchester, the wife of Colonel L. R. H. Keatinge, RAMC—a daughter.

LEVACK.—On Jan. 4, at Camborne, Cornwall, the wife of Captain J. H. Levack, RAMC—a daughter.

MACDONALD.—On Jan. 7, at Putney, the wife of Captain I. D. MacDonald, RAMC—a daughter.

MINETT.—On Jan. 11, in London, the wife of Dr. Jack Minett, Colonial Medical Service—a daughter.

WOOD.—On Jan. 7, at Oxford, the wife of Dr. Michael Wood—a son.

MARRIAGES

BORTHWICK—BERRY.—On Dec. 20, at Poona, India, Robert Donnan Borthwick, captain RAMC, to Margaret Eleanor Berry, QAIMNSR.

GASS—CHAPMAN.—On Jan. 6, at Pembury, Thomas Gass, captain RAMC, to Rosemary Chapman, section officer WAAF.

MACKINTOSH—ORMSBY-JOHNSON.—On Jan. 10, at Cairo, Finlay George Mackintosh, major RAMC, to Eileen Ormsby-Johnson.

WILLIAMS—LUMSDEN.—On Dec. 30, in Birmingham, Robert Evan Owen Williams, MB, B SC, to Margaret Lumsden, CSP, MAOT.

DEATHS

BARLOW.—On Jan. 12, in London, Sir Thomas Barlow, Bt., KCVO, MD LOND., D SC, FRCP, FRS, aged 99.

BLATHWAYT.—On Jan. 10, at Bath, Arthur de Visme Blathwayt, MRCS.

BROATCH.—On Jan. 11, at Glasgow, George Thomas Broatch, CBE, MB EDIN., surgeon rear-admiral, of Eastbourne, aged 82.

CAMERON.—On Jan. 10, in Edinburgh, Isabella Douglas Cameron, MD EDIN., DPH, late senior medical officer in the Ministry of Health.

CROMIE.—On Jan. 7 at Nailsea, Somerset, George Cromie, BA NZ, MB EDIN., aged 73.

HAWTHORNE.—On Jan. 10, in London, Janie Lorimer Hawthorne, MB GLASG., wife of Dr. C. O. Hawthorne.

MATSON.—On Jan. 12, in Dublin, John Agar Matson, MD DUBL., FRCPI.

MENZIES.—On Jan. 12, at Radlett, William Francis Menzies, MD, B SC EDIN., FRCP, first medical superintendent of Cheddleton Hospital, Staffs, aged 81.

NICHOLSON.—On Jan. 7, at Northampton, Edgar Nicholson, MRCS.

PEDLEY.—On Jan. 9, at Bournemouth, Charles Franklin Pedley, MRCS, DPH, deputy medical officer of health for Bournemouth.

WHITWELL.—On Jan. 9, in London, James Richard Whitwell, MB EDIN., formerly medical superintendent of St. Audry's Hospital, Melton, Suffolk, aged 81.

Notes and News

BRITISH ASSOCIATION

ON Jan. 12 and 14 the British Association held a conference on the place of science in industry. The conference was opened by Sir Richard Gregory, and at its four sessions the chair was taken by Mr. Ernest Bevin, Lord McGowan, Sir John Greenly, and Lord Woolton. The first three sessions were mainly concerned with industrial research and development, but the fourth, looking to the future, gave all its attention to what science might accomplish in the broad field of health. Lord Woolton, who opened this last discussion, spoke of the debt of gratitude which the Government owed to science for educating the public in the principles of nutrition during the pre-war years. This eased the stern task of the Ministry of Food, and it was through scientific guidance that the nutrition of the people had actually improved during war-time. In the future, Lord Woolton said, the scientist must be given his chance, because the nation would be too poor to afford the extravagance of preventable ill health. He emphasised the need for spending a greater part of the national income on research than the present meagre 0·1 per cent., and urged that the State should take a full share in promoting fundamental research as well as applied science.

Mr. E. Carter dealt with the housing problem of the future, laying stress on the need for closer coöperation between the technical experts and those concerned with design and beauty. The food policy of the future was seen by Sir Joseph Barcroft as a unique opportunity for collaboration between agriculture, veterinary science, and the health organisation, but little real advance could be made until Britain's future policy in food production was known.

Dealing with the contribution of science to health, Prof. J. M. Mackintosh, FRCP, referred to the need for a wider distribution of public-utility services such as water and electricity. In all branches of preventive medicine there should be closer coöperation between medical and technical officers to serve the common purpose of human welfare.

Sir Lawrence Bragg, in summing up, suggested that the real question was what we as a nation wished science to accomplish. In the past a great deal of scientific effort had been misdirected or wasted because public authorities, industrialists, and other bodies responsible for the public welfare had failed to apply the findings of science to everyday problems of life and work.

NEEDS AND BENEFITS

COMMENTING on the Government's white-paper on National Insurance, the Charity Organisation Society expresses satisfaction that the plan follows in its general structure the proposals of the Beveridge report. It notes, however, that the Government have rejected the subsistence principle: benefits will not be related to scientific estimates of nutritional and welfare requirements, or to the general cost of living. While appreciating the reasons for these decisions, the society suggests that rates of benefit should be periodically reviewed by an independent board.

On children's allowances the society points out that payment in kind to children attending school would penalise those children who are unable to attend school, either because they are too young or because of sickness or any other cause, and the deprivation would fall on them at a time when presumably their needs would be greatest. The society therefore urges that children's allowances should be paid out of taxation at the rate of 8s. per week for each child after the first. The allowance should be paid in the middle of the week, and free milk should be available to all children below the school-leaving age, in addition to the children's allowance. A school meals service should be established for all children, but the meals should be paid for by the parent out of the children's allowance, in order that those children whose parents prefer them to return home for their dinners may not be penalised.

NATIONAL WAR FORMULARY

SOME alterations and additions to the second edition of the National War Formulary, to conform with the Seventh Addendum to the British Pharmacopœia and with the present supply position, will come into force on Feb. 1. Of the additions the most important is "Cream of sulphanilamide and sulphathiazole" for burns. This cream takes some three hours to dispense, so it will be kept ready for use in 1 oz. tubes only. Since it falls in Schedule IV of the Poisons Regulations prescribers must state the amount to be supplied.

If prescriptions are not for 1 oz. or multiples of 1 oz. delay in supply will be inevitable. Similarly with sterile powder of sulphanilamide, prescribers are asked to order 5 g. or multiples of 5 g. to avoid delay and waste. There is a severe shortage of preparations made from ipecacuanha. Squill is the approved alternative, but senega is again being imported and ammonia and senega mixture has been added to the *NWF*. There is an acute shortage of colchicum and it will be long before supplies improve. When the galenicals of this drug are unobtainable, colchicine tablets may be ordered: but doctors should prescribe these in minimal quantities and only where colchicum therapy is essential.

NEW HEALTH SERVICE AND PHARMACISTS

LECTURING in Scotland last week on the National Health Service, Mr. H. N. LINSTEAD, MP, secretary of the Pharmaceutical Society, said that the chances of the Government's proposals being put into effect were substantial. But, at a guess, the new service would not be ready to operate before 1948 at the earliest. The type of health centre he himself advocated was that recommended in the Dawson report, where the patient was sent by the family doctor for further examination, for consultation with the specialist, and for minor surgery. The private consulting-room would remain the normal meeting place of doctor and patient. If (as he hoped) the scheme was to be universal, it would embrace more than twice the present number of National Health Insurance patients. The NHI service could not be adapted to supply even the minimum needs of another 20 million, or more, people, and a new organisation was required from the first. Clearly the 15,000 pharmacists at present providing the NHI service must be used, as well as the outpatient departments of hospitals and public dispensaries. From this group of existing units a good local pharmaceutical service could be built up, including a night and emergency service and arrangements for express delivery. The individual pharmacist could keep his place in the scheme by giving such a service as to put out of the question the spending of public money in providing municipal dispensaries. No new pharmacy, private or public, should be added to the local panel unless the local pharmacy board was satisfied that it was needed to complete the service. A first-class service, adequately remunerated, would result in a pharmaceutical profession satisfied because it would be able to devote the greater part of its energies to the calling for which it had been trained and qualified and registered.

University of London

Dr. L. S. Penrose has been appointed to the Galton chair of eugenics at University College. Mr. Claude Remington, PH D, has been appointed to the university chair of chemical pathology at University College Hospital medical school.

University of Durham

At a congregation held on Dec. 22, the following degrees were conferred:

MD.—*Helen Ramsay.
MS.—E. J. Field, R. A. Fleming, * John Swinney, *H. K. Vernon.
MB, BS.—W. R. Argument, *J. H. Batchellor, **Marjorie** Bell, Abraham Bender, R. E. Blakey, A. M. Brass, Doreen C. Brown, Elspeth M. C. Brown, Neil Cardoe, R. G. Chaytor, Joan C. Dickinson, W. H. B. Ellis, A. J. A. Ferguson, A. C. Fleming, F. W. Fordyce, Mary M. Harrison, J. D. Irving, Wilfred Jack, Kathleen D. Knox, Muriel M. Lingwood, J. L. McConchie, Norah Martin, Peter Millyard, R. W. J. Naismith, E. M. Norman, G. E. Paget, R. M. S. Parker, Alan Pearson, Kenneth Pickworth, W. G. A. Riddle, R. K. Rowntree, Winifred H. Russell, Jane C. Salkeld, R. G. H. Salkeld, Viola E. Shafto, N. A. Sharples, S. G. Siddle, Emanuel Silver, J. E. Stobbs, W. E. Stuart, Elizabeth Troupe, Doreen M. Watson, J. P. Wedderburn, G. E. Welch, J. T. Wheldon, Jean G. Wight, Mary C. Winters, N. E. Wood, and N. A. Wynne.

* In absentia.

Royal Society of Medicine

At a meeting of the section of odontology on Monday, Jan. 22, at 4.30 PM, Mr. B. W. Fickling will speak on the prosthetic aspect of the buccal inlay operation and Squadron-Leader A. B. MacGregor on jaw injuries. At the section of medicine, on Jan. 23, at 4.30 PM, Brigadier Frank Howitt and Major-General Sir Guy Glover will open a discussion on the development of health in adolescents. On Jan. 25, at 5 PM, at the section of urology there is to be a discussion on sterility in the male, when Mr. Kenneth Walker will be the opening speaker. On Jan. 26 at 3 PM, at the section of epidemiology and State medicine, Brigadier Hamilton Fairley, FRS, will speak on medicine in jungle warfare. On the same day, at 4.30 PM, at the section of disease in children, Dr. J. D. Kershaw, Dr. Isobel Wright, and Prof. J. C. Spence will open a discussion on the school medical service—present and future.

Royal College of Surgeons of England

A meeting of the council was held on Jan. 11, with Sir Alfred Webb-Johnson, the president, in the chair. Arrangements were made for the delivery of professorial lectures on anatomy by Prof. A. J. E. Cave, and on physiology by Prof. John Beattie. The first course will begin on Feb. 19. It was decided to confer the title of research associate of the Royal College of Surgeons of England from time to time, for outstanding assistance in the work of the museum. It was reported that Mr. D. E. Lea of the Strangeways Laboratory, Cambridge, had been reappointed, and Mr. Peter Williams of the Middlesex Hospital had been appointed, Prophit student.

It was decided to recognise the posts of first and second house-surgeon at the Royal Northern Infirmary, Inverness, for the six months' surgical practice required of candidates for the final fellowship examination.

Diplomas of membership were granted to Flavia Z. L. B. James of Bristol and to H. B. Marsden of Manchester. The following diplomas were granted jointly with the Royal College of Physicians:

DPH.—P. S. Jaikaran, H. G. Williams.
DPM.—Paul Cassar, Louise F. W. Eickhoff, R. K. Freudenberg, G. W. Green, Daniel Jackson, P. D. Scott, L. M. Shorvon, G. D. F. Steele, Erich Wellisch.
DLO.—R. G. Boyd, A. S. Davidson, N. A. Punt, Geoffrey Snowden, P. A. Thorpe.

Grant to London Voluntary Hospitals

The Nuffield Trust for the Special Areas has given an additional £75,000 to the King Edward's Hospital Fund to help the voluntary hospitals of London with post-war reconstruction.

Royal Sanitary Institute

A meeting will be held at the town hall, Sheffield, on Jan. 27, at 10.30 AM, when Dr. J. M. Kennedy will speak on the treatment of cerebrospinal fever.

National Hospital, Queen Square

The clinical demonstrations which take place at this hospital, Queen Square, London, WC1, on Saturday mornings are reserved for Service men and those working for examinations.

Association of Industrial Medical Officers

A meeting of the Scottish group of the association will be held on Wednesday, Jan. 24, at 3 PM, in the Institute of Hygiene, University of Glasgow, when Dr. H. M. Roberts, the chairman, will preside.

Association of Clinical Pathologists

A meeting is to be held on Friday and Saturday, Jan. 26 and 27, at 9.30 AM, at the Westminster Hospital school of medicine, Horseferry Road, London, SW1.

Medico-Legal Society

At a meeting to be held at 26, Portland Place, London, W1, on Thursday, Jan. 25, at 4.45 PM, Mr. Hugh Linstead, MP, secretary of the Pharmaceutical Society of Great Britain, will speak on the Pharmacy and Medicines Act, 1941, and the sale of proprietary medicines.

Civil Defence Awards

The MBE has been awarded to Dr. UNA MULVANY, officer in charge of a Southsea first-aid post, and to Dr. T. T. B. WOOD, officer in charge of a Watford mobile unit.

Dr. Mulvany has been on duty during every heavy raid and has always been on her way to duty within seconds of the first bomb falling, never waiting to be called. By her unfailing courage and complete disregard of danger she has set a wonderful example and her kindness and cheerfulness have given great comfort to many. On one occasion when a building received a direct hit she worked her way through the debris to reach three people who were trapped in the cellar and administered morphia to them. Although she must have known that there was imminent danger of the place collapsing she remained with them for nearly two hours.

A flying-bomb damaged houses and people were trapped. During the early stages of the rescue work walls were still collapsing and fires were burning. Dr. Wood took risks on many occasions in order to administer morphia to the injured trapped in the debris. His cheerful leadership and devoted service were an inspiration to the other rescue workers, and his efforts not only contributed materially to the saving of life but were a real source of encouragement to the trapped persons.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

DIGOXIN

'B. W. & CO.'

MILLIGRAMS OF

DIGITALIS ACTIVITY

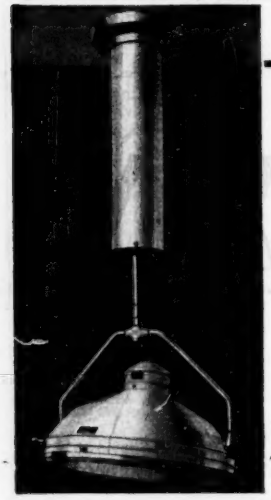
Being a definite substance of constant composition and activity, Digoxin offers an unsurpassed degree of precision in digitalis therapy. Digoxin is a pure crystalline glycoside from *Digitalis lanata*, discovered in the Burroughs Wellcome & Co. Laboratories. It satisfies the established criteria for a reliable, potent digitalis preparation.

'TABLOID' BRAND **DIGOXIN** compressed products for oral administration

'HYPOLOID' BRAND **DIGOXIN** ampoules of solution for intravenous injection

SOLUTION OF DIGOXIN 'B. W. & CO.' for oral administration

BURROUGHS WELLCOME & CO.
(The Wellcome Foundation Ltd.)
LONDON



K.B.B.

ALL BRITISH

SHADOWLESS LAMPS

Ensure that Extra Margin of Safety

The K.B.B. SHADOWLESS LAMP provides an intense shadowless, cool and diffused light, allowing the surgeon to see clearly and distinctly throughout the operation. Can be adjusted by a touch. Special Safety Suspensions. Easy to install. Low maintenance, no glass mirrors to break or require adjustment. Outer glass of non-splinterable safety type.

INSTALLED BY MOST LEADING HOSPITALS, INFIRMARIES AND INSTITUTIONS THROUGHOUT THE COUNTRY

Write for Descriptive Illustrated Leaflet

KELVIN, BOTTOMLEY & BAIRD LTD · GLASGOW

Where **BISCUITS** *are permissible . . .*

By Appointment to H.M. the King

McVITIE & PRICE LTD · EDINBURGH · LONDON · MANCHESTER

THE SAFE LAXATIVE

Constipation is probably the most frequent cause of ill-health, and it is the concern of those who tend the sick, to relieve their patients from this disorder.

In this connection, 'California Syrup of Figs' perfectly meets the need for a safe yet efficacious aperient. Completely void of mineral or synthetic cathartics, it is corrective not purgative, and re-educates the bowel to normal function.

Its pleasant taste and simplicity of dosage makes 'California Syrup of Figs' the laxative of choice for young and old alike. It may safely be employed either in occasional constipation, or for routine use in everyday family life.

'CALIFORNIA SYRUP OF FIGS'

THE CHAS. H. PHILLIPS CHEMICAL CO., LTD., 179, ACTON VALE, LONDON, W.3.

THE ROYAL MEDICAL FOUNDATION

(OF EPSOM COLLEGE)

Patron	HIS MOST GRACIOUS MAJESTY THE KING
President	The Right Hon. Viscount Leverhulme, D.L., J.P.
Treasurer	Surg. Vice-Admiral Sir Reginald Bond, K.C.B., C.M., F.R.C.S.
Chairman of the Council	Douglas C. Bartley, Esq.
Vice-Chairman of the Council	Harold Spitta, Esq., M.V.O., M.D.
Secretary	Major Walter L. Giffard, O.B.E.

We appeal to all members of the Medical Profession, who do not already do so, to subscribe to the above Royal Medical Foundation. In every profession some must fall by the wayside; others must inevitably fall upon evil days.

Our object is to help the families of these less fortunate brethren. To that end the Foundation in 1944 has provided:

(A) 50 Ordinary Pensions £1,500	(D) 10 Council Exhibitions for Boys £600
(B) 43 Foundation Scholarships for Boys (educated, clothed and maintained entirely free of cost) £6,809	(E) 127 Pensions and Annuities of varying amounts £2,872
(C) 13 Scholarships for Girls £570	(F) Grants towards education of 38 Boys and Girls £1,033
	(G) Grants to Widows and Spinsters £217

This is an expenditure of £13,601 in the year.

The net available permanent income towards this expenditure is some £3,500. To cover the balance of expenditure, viz. over £10,000, we depend on the generosity of our subscribers and donors.

Without sufficient help from them even our existing benefactions would have to be curtailed. Owing to lack of funds, many deserving applicants—medical men and widows, and children of school age—remain unassisted. The Sherman Bigg Fund enables the Foundation to make educational grants for those who cannot obtain Scholarships. Donations to augment the income of this Fund will be most welcome.

We have 34 applicants for pensions and 23 spinster applicants for annuities, all hoping for help some day—many of whom have been waiting patiently for years.

We therefore beg you earnestly to send either a subscription or a donation to this Foundation during 1945. When doing so, you may, if you wish, stipulate the particular form of benefaction on which it is to be expended.

Subscriptions and donations may be sent to any of us, or preferably to the Secretary, Epsom College Office: The Secretary's Office, Epsom College, Surrey, by whom full information will gladly be sent on request.

REGINALD BOND, *Treasurer.*
DOUGLAS C. BARTLEY, *Chairman.*
HAROLD SPITTA, *Vice-Chairman.*

BARCLAYS BANK
LIMITED

EDWIN FISHER, Chairman. SIR WILLIAM MACNAMARA GOODENOUGH, Bart., and
HUGH EXTON SEEBOHM, Deputy Chairmen. WALTER OSBORNE STEVENSON, Vice-Chairman.
General Managers: A. W. TUKE, F. C. ELLERTON. General Manager (Staff): C. FITZHERBERT.

STATEMENT OF ACCOUNTS. 31st December, 1944

LIABILITIES	£	£
Current, Deposit and other Accounts	903,149,116	
Balances in account with Subsidiary Banks	14,626,444	
		917,775,560
Acceptances, Guarantees, Indemnities, etc., for account of Customers		15,092,928
Paid-up Capital		15,858,217
Reserve Fund		11,250,000

ASSETS		
Cash in Hand and with the Bank of England		95,556,206
Balances with other British Banks and Cheques in course of collection		35,848,891
Money at Call and Short Notice		24,330,350
Bills Discounted		30,665,203
Treasury Deposit Receipts		368,000,000
Investments		217,340,641
Investments in Subsidiary Banks (at cost, *less* amounts written off):—		
The British Linen Bank—£1,242,394 12s. 6d. Stock		3,727,184
Other Banks—(including fully paid Stock and 500,000 "B" Shares of £5 each, £1 per Share paid up, in Barclays Bank (Dominion, Colonial and Overseas) and 1,000,000 Shares of £1 each, 5s. per Share paid up, in Barclays Bank (France) Limited)		2,494,502
Advances:—Customers and other Accounts	158,371,731	
Balances in account with Subsidiary Banks	626,516	
		158,998,247
Liability of Customers for Acceptances, Guarantees, Indemnities, etc.		15,092,928
Bank Premises and Adjoining Properties (at cost, *less* amounts written off)		7,922,553

Head Office - - - - - 54, LOMBARD STREET, LONDON, E.C.3

DOWN BROS.
LIMITED

SURGICAL INSTRUMENT AND HOSPITAL FURNITURE MANUFACTURERS

•

All Correspondence now to
NEW HEAD OFFICE
23, PARK HILL RISE
CROYDON
Telephone: Croydon 6133

•

Showrooms and Fitting Rooms
22a, CAVENDISH SQUARE
LONDON, W.1 MAYfair 0406

FAMOUS SINCE 1795

The Only Brandy actually bottled at the Chateau de Cognac

OTARD'S BRANDY

Please specify BROOKS *by Name*

The National Health Insurance regulations make it possible for the medical profession to specify any truss by name on medical certificates. Please write or telephone for detailed particulars of Brooks Trusses which are now approved by more than 6,300 doctors.

When writing for details please enclose 2d. stamp to conform with Government regulations

Telephones: London, Holborn 4813; Manchester, Central 5031

BROOKS Appliance Co., Ltd.

(378A) 80, Chancery Lane, London, W.C.2.

(378A) Hilton Chambers, Hilton St., Stevenson Sq., Manchester, 1

MICROSCOPE OUTFITS WANTED

Highest prices paid. Let us know your requirements if you wish to EXCHANGE as we may be able to help you.

DOLLONDS (L) (Estd. 1750)

35, BROMPTON ROAD, LONDON, S.W.3

Tel.: KENsington 2052

FENSTANTON at "FIVE DIAMONDS," Chalfont St. Giles, Bucks

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2493.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind

Terms moderate. Apply to Resident Medical Superintendent. Telegrams: ADAM WEST MALLING. Telephone No. 2: MALLING.

ALUZYME

The Importance of total VITAMIN B ACTION

It has been pointed out (*Ann. Int. Med.*, 1941, 15, 45-51) that treatment with one factor of the vitamin B complex "may rapidly provoke severe signs of deficiency in another factor." It is therefore advisable, when giving intensive therapy with one factor, to administer the entire vitamin B complex concurrently. ALUZYME is the best available natural source of the entire B complex, supplying all the B vitamins, choline, glutathione and minerals of the living yeast in the native state.

Samples on request. ALUZYME PRODUCTS, Park Royal Rd., N.W.10

CRICHTON ROYAL, DUMFRIES

FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. MCCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel.: Dumfries 1119.

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

COURT HALL, KENTON, near EXETER

FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH

FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach

There is also a charming house, EBWORTHY, MANATON, DARTMOOR, situated in 20 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. Telephones—STARCROSS 259 and TEIGNMOUTH 289

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON" **FOR THE TREATMENT OF MENTAL DISORDERS** *Telephone:* RODNEY 4343 (3 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON and is 200 ft. above sea-level

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" **Telephone: Rodney 2641-2642**

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from £4.4.0 weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

TOR-NA-DEE SANATORIUM

Managing Director: DAVID LAWSON, M.D., F.R.S.E.

FOR THE TREATMENT OF PULMONARY TUBERCULOSIS AND ALLIED DISEASES

Senior Physician and Medical Superintendent: R. Y. KEERS, M.D. (Edin.), F.R.F.P.S. (Glas.).

For prospectus apply to The Secretary, Tor-na-Dee, Murtle, Aberdeenshire Telephone: Cults 107

VALE OF CLWYD SANATORIUM

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X-ray plant. Every facility for Artificial Pneumothorax and for operations on the Chest. Electric Lighting. Central Heating.

For particulars apply to Medical Superintendent.

H. MORRISTON DAVIES, M.D., M.Ch. (Cantab.), F.R.C.S., Llanbedr Hall, Ruthin, N. Wales.

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, bio-chemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

CHEADLE ROYAL

CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone:* GATLEY 2231

CALDECOTE HALL

NUNEATON
WARWICKSHIRE

('Phone: Nuneaton 241)

Residential treatment of

"Nervous Disorders" & Alcoholism

(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL, Near LIVERPOOL

Open Air Occupation and Recreation for Patients, Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Ministry of Education.

FEES—	
1st Class (men only)	from £3 per week
2nd Class (men and women)	,, 37/6 ,,
3rd Class (men and women) supported by	
Public Assistance Committees ..	,, 27/6 ,,
Education Committees ..	,, 33/6 ,,
Private	,, 21/- ,,

For further particulars apply to—

C. EDGAR GRISEWOOD, A.C.A., 20, Exchange Street East, LIVERPOOL, 2.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 20080

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis.

Terms: 6 to 10 guineas per week, inclusive.

Full particulars from MEDICAL SUPERINTENDENT, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards

ECCLESFIELD, STAPLEHURST, KENT

Home for the care and cure of Alcoholic cases (ladies). Fine mansion. 100 acres. Successful treatment. Catholic chapel on estate.

For terms apply to Sister Superior (Staplehurst 26111)

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, 12th February, 12th March, 8th April, 1945. MEDICINE, PATHOLOGY, 19th February, 19th March, 15th April, 1945. MIDWIFERY, 21st February, 20th March, 16th April, 1945. MASTERY OF MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

UNIVERSITY EXAMINATION POSTAL INSTITUTION

17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (24 pages)

sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion Square, London, W.C.1. (Telephone: HOLborn 6318.)

BRITISH POSTGRADUATE MEDICAL SCHOOL.
(UNIVERSITY OF LONDON.)

A course of lectures on THE PRINCIPLES OF SURGERY IN THEIR APPLICATION TO WARFARE will be held at the British Postgraduate Medical School during the week commencing 29TH JANUARY, 1945. The lectures include: The Principles of the Management of Wounds and Foreign Bodies; Septic Infection and Penicillin; The Present Position with Regard to Gas Gangrene and other Anaerobic Infections; The Present State of the Treatment of Burns; Hæmorrhage and its Effects; Shock; Transfusion in the Field; Maxilla Facial Injuries; Injuries of Blood Vessels; Forward Surgery; The Treatment of Pelvic Wounds; Injuries of the Brain; Injuries of the Spinal Cord and Peripheral Nerves; Orthopædic Surgery in the Field; The Treatment of Joint Injuries; Injuries of the Chest in the Field; Abdominal Surgery in the Field; Plaster Technique.

Further War Course will commence as follows:—
19TH FEBRUARY, 1945 .. RECENT ADVANCES IN THE MEDICAL ASPECTS OF WAR INJURIES.

ALDRICH-BLAKE TRAVELLING SCHOLARSHIP.

The Trustees of the Aldrich-Blake Memorial Fund will award a Scholarship of 200 guineas in 1945 to a medical Woman graduate from a medical school in the United Kingdom for the purpose of travel and study either in the United Kingdom or abroad.

Applicants for the Scholarship are desired to set out fully their proposals for its use, and to make suggestions with regard to teaching they might be prepared to give or investigations they desire to make on medical subjects. No objection would be entertained to the recipient of the Scholarship accepting an appointment with remuneration in the country she proposes to visit during the tenure of the Scholarship.

Full details of experience, with personal and professional references, are requested, and a statement as to age, birthplace, and whether married or single.

Applications, of which 4 copies are required, must be sent not later than 1st April, 1945, to the Secretary to the Aldrich-Blake Memorial Trust, 8, Hunter-street, London, W.C.1.

1st January, 1945.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.
(Incorporating the ROSS INSTITUTE.)

POSTS OVERSEAS FOR MEDICAL MEN.

A register is kept in the School of medical Men who are prepared to be considered for permanent and temporary posts overseas as the School is frequently approached by plantation and mining companies, &c., to fill vacancies.

The salaries offered are attractive; conditions of service are governed by contract; and many of the posts offer to medical men a most interesting field in which to practise their profession. At the moment there are vacancies for 2 temporary appointments, 1 in Ceylon and 1 in West Africa.

The Director of the Ross Institute is always glad to interview medical men who would like information regarding the possibilities of a career overseas if they will make an appointment to call on him. Inquiries may be addressed to: The Director, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C.1.

CHELSEA POLYTECHNIC, Manresa-road, S.W.3.

A course of 8 lectures on THE ACTION AND USES OF DRUGS will be given by Mr. F. G. HOBART (Pharmaceutist and Lecturer in Pharmacology to the Westminster Hospital), on Wednesdays at 7.30 P.M., commencing 31ST JANUARY, 1945. Fee for the course, 10s.

Particulars on application to the Principal.

EXAMINING SURGEONS: Factories Act, 1937. The following appointments as Examining Surgeon under the Factories Act, 1937, are vacant. Applications should be sent to the Chief Inspector of Factories, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
PONTYPOOL ..	MONMOUTH ..	30TH JANUARY, 1945
LINCOLN ..	LINCOLN ..	30TH JANUARY, 1945

BOROUGH OF WALTHAMSTOW. Thorpe Coombe Maternity HOSPITAL. (54 Beds.) Applications are invited from qualified medical Women, including W practitioners who now hold A posts, for the post of ASSISTANT RESIDENT MEDICAL OFFICER (B2) at a salary of £200, plus bonus £18 5s., with board, residence, and laundry. To W practitioners the appointment will be limited to 6 months; otherwise may be extended to 12 months.

Forms of application, to be obtained from the undersigned, should be completed and returned, with copies of 3 recent testimonials, not later than NOON on Saturday, 27th January, 1945. G. A. BLAKELEY, Town Clerk.

Town Hall, Walthamstow, E.17, 2nd January, 1945.

THE CENTRAL COUNCIL FOR HEALTH EDUCATION. MEDICAL LECTURERS (Male or Female). The Central Council for Health Education invites applications for the above-mentioned part-time appointments. Remuneration £150 p.a. for each fixed day per week. Applicants should state on which day or days they can be regularly available each week, and must be free to travel on that day or days as required. The principal duties will be to lecture to doctors, teachers, nurses, youth leaders, &c., throughout England and Wales, and first-class travelling and maintenance allowances will be paid when necessary. Experience in public health work and in child health is desirable, and a high standard of lecturing ability is essential.

Further particulars can be obtained from the undersigned, to whom typed and tabulated applications, stating sex, age, education, qualifications, experience, and position regarding National Service, should be sent to reach him not later than Monday, 29th January, 1945.

ROBERT SUTHERLAND, Medical Adviser and Secretary.
Central Council for Health Education, Tavistock House, Tavistock-square, London, W.C.1.

LONDON COUNTY COUNCIL. Applications are invited from registered medical practitioners for appointments of TEMPORARY SENIOR ASSISTANT MEDICAL OFFICERS (B1) in the infectious hospitals service. Salary £500 a year, rising by £25 a year to £600 a year, plus temporary cost-of-living additions, with board, lodging, and washing; married quarters are not available. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 appointments and rejected by the R.A.M.C., may apply.

Application form obtainable (stamped addressed envelope necessary) from the Medical Officer of Health (S.D.2), County Hall, S.E.1, returnable by 12th February, 1945. Canvassing disqualifies.

KING EDWARD MEMORIAL HOSPITAL, Ealing. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A) to Special Departments (Gynæcological), Ear, Nose, and Throat, &c.), including Anæsthetics, vacant 4th February. 6 months' appointment. Salary at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent immediately to—
R. A. MICKELWRIGHT, House Governor.

KING EDWARD MEMORIAL HOSPITAL, Ealing. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A) to Special Departments (Orthopædics, &c.), including Anæsthetics, vacant 1st February. 6 months' appointment. Salary at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent immediately to—
R. A. MICKELWRIGHT, House Governor.

THE WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of RESIDENT HOUSE SURGEON (A), vacant 1st February, 1945. The appointment will be for a period of 6 months and salary at the rate of £130 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, accompanied by copies of 3 recent testimonials, should be sent immediately to: J. N. DRAKE, Secretary.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.3. Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE PHYSICIAN (A), vacant 1st February, 1945. The appointment is for a period of 6 months. Salary at the rate of £150 p.a.

Applications should reach the Secretary not later than the first post on Tuesday, the 23rd January, 1945.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of a RESIDENT HOUSE SURGEON (B2), vacant in January, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the Honorary Secretary-Superintendent.

THE ROYAL DENTAL HOSPITAL OF LONDON, Leicester Square, W.C.2. There are vacancies on the staff for 3 HONORARY ASSISTANT DENTAL SURGEONS. Candidates, who must be graduates or licentiates in dental surgery of one of the universities or licensing bodies recognised by the General Medical Council of the United Kingdom, are requested to send applications and testimonials or the names of referees by 31st July, 1945, to the Secretary, from whom further particulars may be obtained.

NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1. Applications are invited for the post of CASUALTY OFFICER (A) under the E.M.S. The appointment is for a period of 6 months, as from 1st February. Salary £120 p.a., with board, residence, and laundry allowance. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating qualifications, age, &c., with copies of not more than 3 testimonials, by 22nd January, addressed to the Secretary.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. A RESIDENT MEDICAL OFFICER (B1) is required at the Country Branch Hospital, Tadworth Court, Tadworth, Surrey. Duties to commence preferably early in February, 1945. Salary £550 p.a., with full residential emoluments. The appointment, which is renewable, is tenable in the first instance for 6 months. Preference will be given to those who are Members of the Royal College of Physicians and hold the Diploma in Child Health. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Further particulars and form of application, which must be returned not later than Monday, the 29th January, 1945, are obtainable from: H. F. RUTHERFORD, Secretary.

January, 1945.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. 2 or possibly 3 part-time SENIOR MEDICAL OFFICERS, each being required for duty in the Out-patient Department, to attend from 9 A.M. on not less than 2 mornings each week. These appointments are in connexion with the introduction of an Appointments System. As the duties will involve the running of independent clinics, preference will be given to Members of the Royal College of Physicians and those having the Diploma in Child Health. A fee of 2 guineas will be paid for each morning session.

Further particulars and form of application, which must be returned not later than Monday, the 29th January, 1945, are obtainable from: H. F. RUTHERFORD, Secretary.

January, 1945.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. A vacancy exists for RESIDENT SURGICAL OFFICER (B1). Salary £350 p.a., with full residential emoluments. The post, which is renewable, is tenable in the first instance for 6 months. Preference will be given to those holding the diploma of F.R.C.S. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Further particulars and form of application, which must be returned not later than Monday, the 29th January, 1945, are obtainable from: H. F. RUTHERFORD, Secretary.

January, 1945.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy shortly for a CASUALTY OFFICER (B1) who will be responsible for both the minor surgical clinic and minor surgery in the Out-patient Department. Salary £350 p.a., with full residential emoluments. The appointment in the first instance will be made for 6 months but is renewable. Preference will be given to those holding the diploma of F.R.C.S. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Further particulars and form of application, which must be returned not later than Monday, the 29th January, 1945, are obtainable from: H. F. RUTHERFORD, Secretary.

January, 1945.

ROYAL FREE HOSPITAL, Gray's Inn-road, London, W.C.1. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1) at Three Counties Emergency Hospital, Arlesey, Beds, vacant 1st March, 1945. Salary £350 p.a., payable by the E.M.S. Applicants must have been qualified for over a year and preferably 18 months, but not more than 10 years. The appointment will be for 6 months in the first place. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age and accompanied by copies of 3 recent testimonials, should be sent on or before 6th February to: RICHARD T. BARTLEY, Secretary.

ROYAL FREE HOSPITAL, Gray's Inn-road, London, W.C.1. Applications are invited from registered medical practitioners for the appointment of OBSTETRIC AND GYNECOLOGICAL REGISTRAR (B1). Applicants must not be more than 10 years qualified. Salary £350 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age and accompanied by copies of 3 recent testimonials, should be sent on or before 9th February to: RICHARD T. BARTLEY, Secretary.

THE ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. At the Elizabeth Garrett Anderson Hospital. Applications are invited from registered medical practitioners, Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the post of HOUSE PHYSICIAN (A), vacant 1st March, 1945. Appointment for 6 months. Salary at the rate of £115 p.a., with full residential emoluments.

Applications, with 2 copies of 3 testimonials, to be sent to the Secretary of the Elizabeth Garrett Anderson Hospital.

THE ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. At Oster House E.M.S. Hospital, St. Albans. Applications are invited from registered medical practitioners, Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the posts of 2 HOUSE SURGEONS (A), vacant 1st March, 1945. Appointments for 6 months. Salary at the rate of £115 p.a., with full residential emoluments.

Applications for the above appointments, with 2 copies of each of 3 testimonials, to be sent to the Secretary of the Elizabeth Garrett Anderson Hospital.

BRITISH POSTGRADUATE MEDICAL SCHOOL. (University OF LONDON.) Applications are invited from registered medical practitioners, Male and Female, including practitioners liable under the National Service Acts who have not yet completed 3 months since date of qualification, for the appointment of HOUSE PHYSICIAN (A) (Children), vacant 7th March, 1945. The appointment is for 6 months. The salary is at the rate of £105 p.a., plus full residential emoluments.

Apply the Dean, British Postgraduate Medical School, Ducane-road, W.12, before 3rd February, 1945.

THE ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited from registered medical practitioners, Male, for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant almost immediately. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. The salary is at the rate of £250 p.a., together with full board and lodging and laundry. Suitably qualified R practitioners now holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Please apply in writing to the Joint Honorary Secretaries.

PUTNEY HOSPITAL. Applications are invited from registered surgical practitioners, Male, for the appointment of HOUSE SURGEON (A), vacant 1st February, 1945. The appointment will be for a period of 6 months. Salary is at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Apply to the Secretary.

GERMAN HOSPITAL, Ritson-road, Dalston, London, E.8. (British Voluntary Hospital under E.M.S. Scheme.) HOUSE SURGEON (B2) with some practical experience wanted immediately. Commencing salary £200 p.a. or more according to experience, with full board and residence. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months.

Please apply with copies of testimonials to the Secretary.

NATIONAL HOSPITAL, Queen-square, W.C.1. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (B1) (part-time, non-resident). Position vacant in February, 1945. Salary at the rate of £200 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, with testimonials, should be sent to the Secretary not later than 30th January, 1945.

EVELINA HOSPITAL FOR SICK CHILDREN, London, S.E.1. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY AND OUT-PATIENT OFFICER (A), vacant 1st February, 1945. Salary £150 p.a. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and previous experience, accompanied by copies of recent testimonials, to be sent as soon as possible to—

12th January, 1945. W. H. SIDNELL, House Governor.

BOROUGH OF WILLESDEN. Applications are invited for the post of RESIDENT MEDICAL OFFICER (B2) at the Willesden Municipal (Fever) Hospital. The salary will be at the rate of £250, plus bonus of £24 14s. for men and £20 3s. for women p.a., with board, lodging, and laundry, and the appointment will be subject to the staff regulations of the Council. The Hospital admits all the notifiable diseases. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise may be extended to 1 year.

Applications, stating age, qualifications, nationality, and previous experience, with copies of 3 recent testimonials, to be sent to the Medical Superintendent, Willesden Municipal Hospital, Brentfield-road, Neasden, N.W.10, as soon as possible.

W. T. PIRIE, Town Clerk.

UNIVERSITY OF LONDON. The Senate invite applications for the UNIVERSITY READERSHIP IN ENTOMOLOGY tenable at the London School of Hygiene and Tropical Medicine (salary £1050).

Applications must be received, not later than first post on 31st July, 1945, by the Academic Registrar, University of London, Richmond College, Richmond, Surrey, from whom further particulars should be obtained.

CHARING CROSS HOSPITAL. Surgical Registrars. Applications are invited from registered medical practitioners, Male, for the above B1 appointments. 1 tenable in London, 2 at Ashridge Hospital, Berkhamsted. Minimum commencing salary £350 p.a. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copies of 3 testimonials, should be sent immediately to:—GEORGE J. JONES, Secretary.

Charing Cross Hospital, London, W.C.2.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of whole-time ASSISTANT in the Radiodiagnostic Department. The appointment is a temporary one and subject to annual re-election. Salary will be according to qualifications and experience with a minimum of £600 p.a.

Applications should be sent to the Secretary, St. George's Hospital, Hyde Park Corner, S.W.1.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (B2, resident) required at North Middlesex County Hospital, Edmonton, N.18. Applications invited from registered medical practitioners, including R and W practitioners holding A posts. Salary £250 p.a., plus war bonus. Board, lodging, and laundry. Whole-time duties, such as Council may require, under supervision of Medical Director, will be in Out-patient Department and will include medical, surgical, and casualty cases, with minor surgery. Appointment, subject to medical examination, is for 6 months, with possibility of extension to 12 months (except R and W practitioners). Post vacant immediately.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to Medical Director, "B3," of Hospital. Application forms not provided. Closing date 3rd February, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Casualty Officer (B1, resident) required at Chase Farm Hospital, Enfield, Middlesex. Applications invited from registered medical practitioners who have held several house appointments and had considerable all-round experience. R and W practitioners holding B2 posts eligible; R practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £350 p.a., plus war bonus. Board, lodging, and laundry. Whole-time duties, under Medical Director, include casualties and admissions to Hospital. Appointment is for 6 months, with possibility of extension to 12 months. Medical examination. Post now vacant.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to Medical Director, "B3," of Hospital. Closing date 27th January, 1945. C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (B2, resident) required at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners, including R and W practitioners who now hold A posts. Salary £250 p.a., plus war bonus. Board, lodging, and laundry. Whole-time medical duties, such as Council may require, under supervision of Medical Director. Appointment, subject to medical examination, is for 6 months, with possibility of extension to 12 months, except R and W practitioners. Post vacant 28th February, 1945.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of not more than 3 recent testimonials, to Medical Director, "B3," of Hospital. Closing date 24th January, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

WEMBLEY HOSPITAL, Wembley, Middlesex. Applications are invited for the immediate vacancies of 2 HOUSE SURGEONS (1 A and 1 B2), (Male or Female). Each appointment will be for a period of 6 months. Salary at the rate of £175 p.a., with full residential emoluments. For the B2 post R and W practitioners holding A posts may apply. For the A post practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications should be sent immediately to—

3rd January, 1945. P. E. WINDO, Secretary.

CARDIFF ROYAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT ANÆSTHETIST (B2), vacant 1st February, 1945. The salary is at the rate of £250 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 12 months.

R. ARMSTRONG, Medical Superintendent.

CITY OF MANCHESTER. Crumpsall Hospital (1400 Beds) and PARK HOUSE (1999 Beds). Applications are invited from registered medical practitioners, Male or Female, for the temporary appointment of RESIDENT ASSISTANT MEDICAL OFFICER (B1) for the mental wards. The post will become vacant on 31st March, 1945, or earlier. The successful candidate will have excellent clinical material for study for the D.P.M. Salary £350 p.a., rising by annual increments of £25 to £450, with board, residence, and laundry valued at £85 in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. An additional £50 p.a. is payable if the successful candidate holds the qualification D.P.M. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, G.P.O. Box 399, Town Hall, Manchester, 2, and applications for the post must be received by him not later than 3rd February, 1945. Canvassing in any form is prohibited.

PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 11th January, 1945.

CITY OF MANCHESTER. Baguley Sanatorium. (421 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1), vacant end of February, 1945. Candidates should have had experience in the treatment of pulmonary tuberculosis. The appointment will be temporary for the duration of the war. Salary £350 p.a., rising by annual increments of £25 to £450, with board, residence, and laundry valued at £85 in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, G.P.O. Box 399, Town Hall, Manchester, 2, and applications for the post must be received by him not later than 10th February, 1945. Canvassing in any form is prohibited.

PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 12th January, 1945.

MANCHESTER ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (B1), Radiological Department (non-resident), shortly vacant. Applicants must hold a Diploma in Radiology. Salary is at the rate of £350 p.a. R practitioners now holding B2 posts, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications should be sent not later than Saturday, 27th January, 1945, to—

F. J. CABLE, General Superintendent and Secretary.

THREE COUNTIES EMERGENCY HOSPITAL, Ariesey, Beds. (940 Beds.) Applications are invited from registered medical practitioners (Male) for the appointment of RESIDENT REHABILITATION OFFICER for the above Hospital, duties to commence as soon as possible. The appointment is for 1 year. Salary at the rate of £350 p.a., with full residential emoluments. The post is a B1 appointment and the Hospital ranks as a recognised appointment for the Diploma of Physical Medicine. It is a particularly suitable appointment for a Medical Officer invalided on account of health.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, should be sent to the Medical Superintendent, Three Counties Emergency Hospital, Ariesey.

WALSALL GENERAL HOSPITAL. (181 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the following posts:—

HOUSE PHYSICIAN (A). £150 a year.

HOUSE SURGEON (A). £150 a year.

Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months. Salary is at the rate specified above, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be forwarded immediately to—

W. H. HARPER, Honorary House Governor.

NEWCASTLE UPON TYNE NATIONAL RADIUM CENTRE. Applications are invited at an early date for the post of ASSISTANT RADIOTHERAPIST to the Newcastle upon Tyne National Radium Centre. Candidates must be registered medical practitioners. It is desirable that they should have had previous experience of radium and X-ray therapy, and have the intention of specialising in this branch of medicine. The salary will be according to qualifications and experience, with a minimum of £600 p.a.

Applications, giving full particulars and accompanied by copies of not more than 3 recent testimonials, should be sent to DR. A. W. SANDERSON, Secretary of Newcastle upon Tyne National Radium Centre, Royal Victoria Infirmary, Newcastle upon Tyne, from whom further information may be obtained.

PAPWORTH VILLAGE SETTLEMENT, near Cambridge. Appli-cations are invited from registered medical practitioners for the post of SENIOR ASSISTANT MEDICAL OFFICER (B1) in charge of male treatment wards, *with opportunity for experience in collapse therapy and thoracic surgery*. Salary £400 p.a., with board, lodging, and laundry. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copies of 3 recent testimonials, should be sent to the Chief Medical Officer, Papworth Village Settlement, Papworth Hall, Cambridge

THE ROYAL INFIRMARY, Sunderland. (312 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT ORTHOPÆDIC HOUSE SURGEON (B2), vacant on the 3rd February, 1945. Salary is at the rate of £250 p.a., with full residential emoluments provided the applicant has had fracture experience. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

M. J. HUNTLEY, House Governor and Secretary.

THE ROYAL INFIRMARY, Sunderland. (312 Beds.) Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the following appointments, which are tenable for a period of 6 months :—

(1) CASUALTY OFFICER AND HOUSE SURGEON (A) to the Ear, Nose, and Throat Department, now vacant. This post is recognised for the D.L.O.

(2) HOUSE SURGEON (A), vacant shortly.

The salary for each post is at the rate of £175 p.a., with full residential emoluments.

M. J. HUNTLEY, House Governor and Secretary.

OLDHAM ROYAL INFIRMARY. (204 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the post of HOUSE PHYSICIAN (A), vacant 1st February. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent not later than the 31st January, 1945, to—

F. W. BARNETT, General Superintendent and Secretary.

CITY OF CARLISLE. City General and Fusehill Emergency HOSPITALS, CARLISLE. (100 civilian Beds, 240 E.M.S. and reserve Beds.) Applications are invited for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (A) to assist in care of civilian beds and for duty in surgical wards of adjacent E.M.S. hospital. Appointment will be for a period of 6 months from 1st February, 1945. Salary £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications should be sent to the Acting Medical Officer of Health, 22, Fisher-street, Carlisle, as early as possible.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of OPHTHALMIC HOUSE SURGEON (A) at the Royal Hospital, now vacant. This post is recognised for the D.O.M.S. Salary is at the rate of £80 p.a., with full residential emoluments. A bonus of £20 will be payable after 6 months' satisfactory service and a further bonus of £10 after a second 6 months' satisfactory service. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise may be extended.

Applications should be sent immediately to the General Superintendent.

THE ROYAL LIVERPOOL UNITED HOSPITAL. David Lewis NORTHERN HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY OFFICER (B2) at the David Lewis Northern Hospital for the period to 30th June, 1945. Salary is at the rate of £100 p.a., with board and residence, or £120 p.a., with board and residence, where a previous appointment has been held. R and W practitioners who now hold A posts may apply.

Applications, stating age, nationality, qualifications, with experience and details of previous appointments, and (except in the case of students of the Liverpool Medical School) accompanied by copies of 3 recent testimonials, should be sent not later than Thursday, 1st February, 1945, to—

A. V. J. HINDS, Secretary.

The Royal Liverpool United Hospital,
66, Rodney-street, Liverpool, 1.

HUNTINGDONSHIRE COUNTY COUNCIL. Public Health Department. Applications are invited from registered medical practitioners (Female) for the post of RESIDENT MEDICAL OFFICER (B1) at Paxton Park Emergency Maternity Home in the county of Huntingdonshire. Candidates must have had previous midwifery experience. The salary will be at the rate of £350 p.a., with full board, lodging, and laundry. Suitably qualified W practitioners holding B2 or B1 appointments may apply. The post is limited to a period of 1 year.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of not more than 2 recent testimonials, should be sent at once to—

N. H. HARRISON, County Medical Officer.

County Offices, Gazeley House, Huntingdon.

WHITE LODGE EMERGENCY HOSPITAL, Newmarket. (775 Beds.) Applications for the following A appointments are invited from registered medical practitioners (Male or Female) :—

(*a*) HOUSE PHYSICIAN ASSISTANT ANÆSTHETIST, now vacant.

(*b*) HOUSE SURGEON ASSISTANT ANÆSTHETIST, now vacant.

A full-time Anæsthetist is employed.

Salary at the rate of £150 p.a., plus full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months; otherwise limited to 1 year.

Applications to Medical Superintendent.

ST. BARTHOLOMEW'S HOSPITAL, Rochester. (201 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (B2), vacant 1st March, 1945. Salary £150 p.a., plus E.M.S. distribution of approximately £50 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be for 6 months.

Applications, giving particulars of nationality, age, qualifications, &c., to be addressed to the Superintendent-Secretary.

THE RADCLIFFE INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of SURGICAL REGISTRAR (B1), vacant 1st April, 1945. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. The salary is at the rate of £500 p.a., with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, full Christian names, nationality, qualifications with dates, experience, details of previous appointments, and accompanied by 3 recent testimonials, should be sent to the undersigned not later than 3rd February, 1945.

The teaching of medical students is part of the normal duties of the Surgical Registrar.

Oxford. A. G. E. SANCTUARY, Administrator.

COUNTY BOROUGH OF MIDDLESBROUGH. Public Health Department. HEMLINGTON EMERGENCY HOSPITAL. Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER (B2) at the above Hospital (480 Beds). Good experience is afforded in both medical and surgical work. The salary is at the rate of £200 p.a., together with full residential emoluments. The successful candidate will be required to pass satisfactorily a medical examination. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for 12 months.

Applications to be sent to the Medical Officer of Health, Public Health Department, Municipal Buildings, Middlesbrough, not later than Tuesday, 30th January, 1945.

PRESTON KITCHEN, Town Clerk.

Municipal Buildings, Middlesbrough, 11th January, 1945.

ROYAL LANCASTER INFIRMARY, Lancaster. (311 Beds.) (Hospital recognised by the Royal College of Surgeons (England) for 2 Senior Posts.) Applications are invited from registered medical practitioners, Male and Female, for the following posts, vacant on 1st February :—

(1) SENIOR HOUSE SURGEON (B1). Salary £200 p.a. Suitably qualified R and W practitioners who now hold B2 posts, also R practitioners who now hold B1 and rejected by the R.A.M.C., may apply.

(2) SECOND HOUSE SURGEON (B2), Obstetrics and Gynæcology. Salary £175 p.a. R and W practitioners holding A posts may apply, when the appointment will be limited to 6 months; otherwise may be extended. In both cases full residential emoluments are included.

Applications should be sent to—

C. H. GRIMSHAW, Superintendent-Secretary.

BOURNEMOUTH. ROYAL VICTORIA AND WEST HANTS HOSPITAL. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1) for Fracture and Orthopædic Departments, now vacant. Applicants should have held house appointments and have had suitable surgical experience. Preference will be given to candidates holding the diploma of F.R.C.S. Salary is at the rate of £300 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications forthwith to: GORDON M. SAUL, Secretary.

SAINT MARY'S HOSPITALS, Whitworth Park, Manchester, 13. Applications are invited for the appointment of SENIOR RESIDENT OBSTETRICAL SURGEON (B1) at the country branch, Prestbury, Cheshire (70 Beds), vacant in February. Applicants should have held house appointments and had surgical and obstetrical experience. Preference will be given to candidates holding the diploma of M.R.C.O.G. Salary is at the rate of £250 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, with copies of testimonials, to be sent forthwith to: A. R. WISE, General Superintendent.

LANCASHIRE COUNTY COUNCIL. Lake Hospital, and Darnton HOUSE, ASHTON-UNDER-LYNE. Applications are invited from registered medical practitioners (Male or Female) for the appointment of RESIDENT MEDICAL OFFICER (B2). Salary is at the rate of £250 p.a., together with the usual residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise may be renewed for a further period of 6 months.

Forms of application from the County Medical Officer of Health, Hospital and Medical Department, County Offices, Preston, to whom all applications must be forwarded, to arrive not later than Monday, the 29th January, 1945.

R. H. ADCOCK, Clerk of the County Council.

County Offices, Preston, 12th January, 1945.

THE ROYAL INFIRMARY OF EDINBURGH. Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts, for the appointment of RESIDENT ANÆSTHETIST (B2), becoming vacant in March, 1945. To R or W practitioners the appointment will be for a period of 6 months; otherwise for 1 year. The salary is at the rate of £150 p.a. for the first 6 months and £175 p.a. for the second 6 months, with full residential emoluments. R and W practitioners must have obtained the sanction of the Central or Scottish Central Medical War Committee to their application.

Applications, stating age, nationality, and qualifications, with details of present post, and accompanied by copies of recent testimonials, should be addressed to the Superintendent, Royal Infirmary, Edinburgh.

HIGH WYCOMBE AND DISTRICT WAR MEMORIAL HOS-PITAL. (100 Beds.) Applications are invited from registered medical practitioners, including R practitioners holding A posts, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 12th February, 1945. The appointment is for 6 months. Salary at rate of £200 p.a., plus residence and board.

Applications, with details, to: E. BARBER, Secretary.

GENERAL HOSPITAL, Nottingham. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence about 17th February. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, House Governor and Secretary.

6th January, 1945.

THE DUCHESS OF YORK HOSPITAL FOR BABIES, MANCHESTER, 19. (86 Cots.) Applications are invited from medical practitioners (Male and Female) for the post of JUNIOR RESIDENT MEDICAL OFFICER (A). Salary at the rate of £100 p.a., with full emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply. Appointment will be for a period of 6 months, from 24th January, 1945.

Applications, accompanied by copies of 3 testimonials, to be sent immediately to: LOUISE GILLESPIE, Secretary.

ST. ALBANS AND MID HERTS HOSPITAL, Church-crescent, ST. ALBANS, HERTS. (75 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 15th March, 1945. Salary at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may apply, when the appointment will be limited to 6 months.

Applications, together with copies of testimonials, should be sent immediately to: P. R. BATTISON, Secretary.

SALOP COUNTY COUNCIL HOSPITAL, Cross Houses, near SHREWSBURY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT MEDICAL OFFICER (A). Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise 1 year.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 recent testimonials, should be sent to the County Medical Officer of Health, College Hill, Shrewsbury, not later than 29th January, 1945.

G. C. GODBER, Clerk of the Council.

Shirehall, Shrewsbury, 8th January, 1945.

THE CHESTER ROYAL INFIRMARY. (Normal Capacity 225 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

HOUSE SURGEON (B2). R and W practitioners who now hold A posts may apply.

HOUSE PHYSICIAN (A). Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Both appointments are for 6 months and are vacant 1st February. Salary in each case is £150 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary.

SEAMEN'S HOSPITAL SOCIETY. King George's Sanatorium for SAILORS, BRAMSHOTT, LIPHOOK, HANTS. Applications are invited from registered medical practitioners for the appointment of RESIDENT ASSISTANT MEDICAL OFFICER (B1). Salary at the rate of £350 p.a., plus residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications to the Medical Superintendent.

NORTH CAMBRIDGESHIRE HOSPITAL, Wisbech. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for appointment of HOUSE SURGEON (A), vacant January, 1945. Appointment will be for period of 6 months. Salary £200–£250, with full residential emoluments.

Applications should be sent to the Secretary.

SURREY COUNTY COUNCIL. Kingston County Hospital, Wolverton-avenue, KINGSTON-ON-THAMES. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) at the above Hospital. Salary is at the rate of £120 p.a., plus full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise not exceeding 1 year.

Apply to the Medical Superintendent.

IPSWICH COUNTY BOROUGH COUNCIL. Borough General HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (A), vacant 31st January, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 1 year.

Applications to be sent as soon as possible to the Medical Officer of Health, Public Health Department, Elm-street, Ipswich.

THE STAFFORDSHIRE GENERAL INFIRMARY, Stafford. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), to commence duties immediately. Salary £196 p.a., with board-residence. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, with full particulars as to age and qualifications, accompanied by 3 recent testimonials, to be forwarded to the Secretary.

Stafford, 13th December, 1944.

FREE EYE HOSPITAL, Southampton. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant immediately. Salary is at the rate of £200 p.a., or more according to experience, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 6 months which may be renewed by the Committee of Management.

Applications to the Secretary,
Wilton-avenue, Southampton.

ROYAL EAST SUSSEX HOSPITAL, Hastings. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 1st February, 1945. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise may be extended.

Application should be sent to—

WILFRID G. KEMSLEY, Secretary and House Governor.

THE BOLTON ROYAL INFIRMARY. (270 Beds.) (Resident Medical Staff—6.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 23rd January, 1945. Salary £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, nationality, and experience, together with copies of testimonials, to be forwarded to—

JOSEPH GRIFFITH, Superintendent-Secretary.

ALTRINCHAM GENERAL HOSPITAL. (100 Beds—2 Resident.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR HOUSE SURGEON (A), to commence duties on or about 16th January, 1945. Salary £150 p.a., with residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for 6 months; otherwise renewable.

Applications to: General Superintendent, Altrincham General Hospital, Altrincham, near Manchester.

ROYAL INFIRMARY, Preston. Applications are invited from registered medical practitioners (including practitioners within 3 months of qualification and liable under the National Service Acts) for the following post:—

HOUSE SURGEON (A) to Consulting Surgeon (recognised for the F.R.C.S. examination).

Salary is at the rate of £150 p.a., with full residential emoluments. 6 months' appointment.

Applications, with full details, to be sent to the Superintendent.

THE ROYAL HOSPITAL, Wolverhampton. (Incorporated under Royal Charter.) (310 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), vacant 8th February, 1945. Salary is at the rate of £100 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

2nd January, 1945. W. COCKBURN, House Governor.

NEWARK TOWN AND DISTRICT HOSPITAL. (70 Normal Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

B. C. DION, Secretary-Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Resident ANÆSTHETIST AND ASSISTANT CASUALTY OFFICER (A) required to commence as soon as possible. Salary at the rate of £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

CASUALTY OFFICER (B2) required to commence as soon as possible. Salary at the rate of £200, with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to—

H. J. JOHNSON, General Superintendent and Secretary.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) House Surgeon (A) required to commence 14th February, 1945. Salary at the rate of £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, together with copies of 3 recent testimonials, to be sent immediately to—

H. J. JOHNSON, General Superintendent and Secretary.

ROYAL LANCASTER INFIRMARY, Lancaster. (311 Beds.) (Hospital recognised by the Royal College of Surgeons (England) for 2 Senior Posts.) Applications are invited from registered medical practitioners, Male and Female, for the post of ORTHOPÆDIC AND CASUALTY HOUSE SURGEON (B2), vacant as from 1st February. The salary is at the rate of £175 p.a., with full residential emoluments. R and W practitioners holding A posts may apply, when the appointment will be limited to 6 months; otherwise it may be extended.

C. H. GRIMSHAW, Superintendent-Secretary.

HIGH WYCOMBE AND DISTRICT WAR MEMORIAL HOSPITAL. (100 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 12th February, 1945. Salary at rate of £200 p.a., plus residence and board. R practitioners holding A posts may apply. The appointment is for 6 months.

Applications, with details, to: E. BARBER, Secretary.

CITY OF PLYMOUTH. Mount Gold Orthopædic and Tuberculosis HOSPITAL. (200 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the post of RESIDENT SURGICAL OFFICER (B1). Applicants should have held house appointments and had some experience of orthopædic and fracture work. The duties are mainly in the orthopædic and E.M.S. sections of the Hospital, but may include some duties in the pulmonary tuberculosis wards. The appointment is for 1 year, but terminable at any time by 1 month's notice on either side. Salary is at the rate of £300 p.a., and full residential emoluments. Married quarters are not provided. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, and details of previous experience, should be sent as soon as possible to : T. PEIRSON, Medical Officer of Health.

Seven Trees, Lipson-road, Plymouth.

COUNTY BOROUGH OF BLACKBURN. Applications are invited from registered medical practitioners (Male or Female), including practitioners within 3 months of qualification and liable under the National Service Acts, for the post of RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (A) at Queen's Park Hospital and Institution, Blackburn, at a salary of £250 p.a., together with board, apartments, and attendance. The appointment will be limited to a term not exceeding 1 year, or if an R or W practitioner is appointed a period of 6 months.

Further particulars may be obtained from the Public Assistance Officer, Cardwell-place, Blackburn, to whom applications, stating age, qualifications, and experience, accompanied by copies of 3 recent testimonials, must be sent.

CHAS. S. ROBINSON, Town Clerk.

COUNTY BOROUGH OF DEWSBURY. The Council, with the approval of the Minister of Health, invite applications from registered medical practitioners holding a Diploma in Public Health for the vacancy of TEMPORARY DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Salary £700, plus bonus (Male £49 8s., Female £40 6s.). Terms and conditions of the appointment, together with application form, may be obtained from the Medical Officer of Health, Municipal Buildings, Halifax-road, Dewsbury, to whom applications, accompanied by copies of 3 recent testimonials, should be delivered as soon as possible. The appointment will be subject to the approval of the Minister of Health and the provisions of the Local Government Superannuation Act, 1937. It will be terminated by 3 months' notice on either side.

The person appointed will be required to pass a medical examination, to devote his or her time to the duties of the appointment, and to reside in this borough.

HOLLAND BOOTH, Town Clerk.

Town Hall, Dewsbury, 20th December, 1944.

BURY INFIRMARY (Lancs). (159 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant about the end of January. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £400 p.a., with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving particulars of age, qualifications, nationality, &c., as soon as possible to—

H. WILKINSON, Superintendent.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners for the following appointments :—

HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be for a period of 6 months.

HOUSE PHYSICIAN (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of testimonials, to Honorary Secretary, Victoria Hospital, Accrington.

BURY INFIRMARY (Lancs). (159 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of HOUSE PHYSICIAN (A), vacant about the beginning of February. The post also includes gynæcology and obstetrics. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise renewable.

Applications, giving full particulars, immediately to—

H. WILKINSON, Superintendent.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY, (248 Beds—5 Residents.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), vacant 1st February. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualifying and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, should be sent to—

T. DEWHURST, General Superintendent and Secretary.

NORFOLK AND NORWICH HOSPITAL, Norwich. Applications are invited for the temporary post of ASSISTANT PATHOLOGIST (full-time). Candidates must be registered medical practitioners with experience in pathological work. Salary according to experience, but not less than £700 p.a.

Applications as soon as possible to—

FRANK INCH, House Governor and Secretary.

CORNWALL COUNTY COUNCIL. Applications are invited from registered medical practitioners (Women), preferably holding a Diploma in Public Health, for the appointment of a temporary whole-time ASSISTANT COUNTY MEDICAL OFFICER for Maternity and Child Welfare. Salary within the scale of £500, rising by annual increments of £25 to £700 p.a., with travelling allowance on the County scale.

Applications, stating age, qualifications, and experience, together with copies of not more than 3 recent testimonials, should be sent to the County Medical Officer, County Hall, Truro, not later than 31st January, 1945. Applicants should submit with their application full information as to their liability for military service, medical fitness, and position as regards deferment.

The Minister of Health has given his approval to this appointment. L. P. NEW, Clerk of the County Council.

County Hall, Truro, 2nd January, 1945.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILITATION CENTRE, Bath-row, BIRMINGHAM, 15. Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A), vacant 21st February, 1945. Appointment will be for 6 months. Salary is at the rate of £150 p.a., with full residential emoluments.

2nd January, 1945. A. A. MACIVER, Secretary.

ROYAL BERKSHIRE HOSPITAL, Reading. Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY OFFICER (A), vacant 15th February, 1945. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

H. E. RYAN, Secretary and House Governor.

FALMOUTH AND DISTRICT HOSPITAL, Falmouth. (Voluntary Hospital—50 Beds and 39 Emergency.) Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A). Salary is at the rate of £260, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary.

NORTHUMBERLAND COUNTY COUNCIL. Wooley SanaTORIUM, near HEXHAM. (184 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of ASSISTANT MEDICAL OFFICER (B2). Salary is at the rate of £350 p.a., plus a war bonus (at present £24 14s.), with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise for a period of 1 year.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 2 recent testimonials, should be sent not later than 1st February, 1945, to—

JOHN B. TILLEY, County Medical Officer.

County Hall, Newcastle upon Tyne, 1.

THE CHILDREN'S HOSPITAL, Sheffield (Inc.). (157 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointments of HOUSE PHYSICIAN (A), vacant 11th February, 1945, and HOUSE SURGEON (A), vacant 4th February, 1945. Salary is at the rate of £100 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months.

Applications, stating age, nationality, qualifications, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned. The successful applicant must be a member of a Medical Defence Society.

T. H. G. GARTLAND, Superintendent and Secretary.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (to Special Departments) AND CASUALTY OFFICER (A), for duty at the Greenbank Road Section, vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth, 6th January, 1945.

CAMERON HOSPITAL, West Hartlepool. (86 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A). Duties to commence 1st March, 1945. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, nationality, and experience, together with copies of 3 recent testimonials, should be sent as soon as possible to : Miss P. M. BETTS, Secretary.

ROTHERHAM HOSPITAL, Doncaster Gate, Rotherham, Yorks. (General Voluntary Hospital—150 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointments of HOUSE PHYSICIAN (A) and SECOND CASUALTY OFFICER AND HOUSE SURGEON (A) to Ear, Nose, and Throat and Eye Departments. Salary in each case £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

Applications should be sent at once to the Secretary-Superintendent.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, January 20, 1945.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of CASUALTY HOUSE SURGEON (A) for duty at the Devonport Section, vacant immediately. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.
ARTHUR R. CASH, General Superintendent.
Head Office, Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A) for duty at the Lockyer Street Section, vacant immediately. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months. ARTHUR R. CASH, General Superintendent.
Head Office, Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A) for duty at the Greenbank Road Section, vacant immediately. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months. ARTHUR R. CASH, General Superintendent.
Head Office, Greenbank-road, Plymouth.

CITY OF LEICESTER. City General Hospital, Gwendolen-road. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT HOUSE SURGEON (A). Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise will not exceed 1 year.
Applications (on forms supplied) must be submitted as soon as possible endorsed "House Surgeon," City General Hospital, and addressed to: E. K. MACDONALD, Medical Officer of Health, City Health Department, Grey Friars, Leicester.

LEIGH INFIRMARY, Lancs. (General Hospital, 102 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 12 months.
Applications from friendly alien practitioners are also invited.
Applications, stating age and accompanied by copies of 3 testimonials, to be addressed to—
(Miss) F. M. EVISON, Acting Secretary.

VICTORIA HOSPITAL FOR SICK CHILDREN, Hull. The Board of the above Hospital requires a RESIDENT HOUSE SURGEON (A) (Male or Female) at a salary of £200 p.a., with board, residence, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.
Applications to be sent to the Secretary as soon as possible, stating when free.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY. (248 Beds—5 Residents.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (B2) to the Fracture and Casualty Departments, now vacant. The salary is at the rate of £175 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.
Applications, stating age, nationality, and experience, together with copies of 3 recent testimonials, should be sent as early as possible to—
T. DEWHURST, General Superintendent and Secretary.

CITY OF PORTSMOUTH. Saint Mary's Hospital. (1200 Beds.) Applications are invited from Male registered practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2). The salary is at the rate of £300 p.a., with residential emoluments valued at £150 p.a., and a temporary cost-of-living bonus at present payable at the rate of £49 8s. p.a. R practitioners who now hold A posts may apply, when the appointment will be limited to a period of 6 months; otherwise a period of 12 months.
Application forms may be obtained from, and must be returned to, the Medical Officer of Health, Northern Secondary School, Mayfield-road, Portsmouth. FREDERICK SPARKS,
Municipal Offices, Royal Beach Hotel, Southsea. Town Clerk.
12th January, 1945.

ROYAL HAMPSHIRE COUNTY HOSPITAL, Winchester. (462 Beds.) Applications are invited from registered medical practitioners, Men or Women, for the following appointments:—
HOUSE PHYSICIAN (A), vacant 7th February, 1945.
HOUSE SURGEON (A), vacant 5th February, 1945.
Salary in each case is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.
Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent to: D. M. STANBURY, Acting Superintendent and Secretary.

UNIVERSITY OF ABERDEEN. Wanted, Assistant in Anatomy, medical graduate. Previous teaching experience not essential. To take up duty not later than 1st April, 1945. Salary £300 to £350, according to qualifications.
Applications, with the names of 2 referees, to be sent to the Secretary to the University from whom further particulars may be obtained.
The University, Aberdeen. H. J. BUTCHART, Secretary.

ROYAL INFIRMARY, Preston. Applications are invited from registered medical practitioners, including R practitioners who now hold A posts, for the appointment of CASUALTY OFFICER (B2). Salary at the rate of £200 p.a., with full residential emoluments. If held by an R practitioner, the appointment will be limited to 6 months.
Applications are also invited from registered medical practitioners, Female, including practitioners who now hold A posts, for the appointment of RESIDENT ANÆSTHETIST (B2) (recognised by the R.C.S.(Eng.) in connexion with the D.A.). There is a Visiting Anæsthetist (D.A.) who will give teaching instruction. Salary at the rate of £200 p.a., with full residential emoluments. If held by a W practitioner, appointment will be limited to 6 months.
Applications to be sent as soon as possible to the Superintendent.

HIS MAJESTY'S COLONIAL SERVICE. Colonial Medical Service. Vacancies exist for Women MEDICAL OFFICERS in the Colonial Medical Service. Candidates must be British subjects, preferably under 35 years of age, and possess a medical qualification registrable in the United Kingdom. Experience in maternity and child welfare work is essential. Appointments are pensionable, subject to a period of probation, and for East African Territories carry salaries of £600 for 2 years, rising by annual increments of £30 to £840, and thence by annual increments of £40 to £1000 p.a. For West African Territories the commencing salary is £660 for 3 years, and thence as for East Africa. Free quarters are provided, or an allowance in lieu if quarters are not available. Free first-class passages are provided on first appointment and when taking leave.
Forms of application and memoranda describing appointments generally may be obtained on written request to the Director of Recruitment (Colonial Service), 15, Victoria-street, London, S.W.1. Completed applications should reach the Director of Recruitment not later than 20th February, 1945.

SUDAN MEDICAL SERVICE. There are unexpected vacancies for British-born medical Men. Candidates should be under 30 years of age and unmarried. Salary commences at £E.720 (approximately £738) a year. Postgraduate experience is essential and preference is given to those who have held B appointments or equivalent posts. The maintenance of the efficiency of the African Medical Services has been generally recognised as a vital contribution to the United Nations war effort and the Central Medical War Committee raises no objection to those selected taking up appointments in the Sudan.
Full particulars may be obtained from Dr. H. C. SQUIRES, Consulting Physician to the Sudan Government, 93, Harley-street, W.1 (Telephone: WEL 3423), who would be glad to see intending applicants at the earliest possible date.

Assistant Medical Officer to the London Passenger Transport Board. Application is invited from Male registered medical practitioners for the above position. Preference will be given to applicants between the ages of 30 and 50 years. Applicants should not be eligible for war service. The appointment is whole-time, temporary for the duration of the war, at an inclusive salary of not less than £800 a year.
Applications in writing, accompanied by copies of 3 recent testimonials and giving full details of qualifications and experience, should be sent to: Chief Medical Officer, L.P.T.B., 280, Marylebone-road, N.W.1.

Wanted, Temporary Assistant Woman Medical Officer, non-resident, Post Office (Medical Branch, London), for 6 months, possibility longer. Age preferably under 40. Salary 10 guineas per week.—For particulars regarding duties, &c., apply: Senior Woman Medical Officer, Medical Branch, General Post Office, Armour House, London, E.C.1.

Locum Medical Officer required immediately. Bl appointment. Salary 9 guineas per week, residential.—Apply Medical Superintendent, MIDDLETON-IN-WHARFEDALE SANATORIUM, near ILKLEY, YORKS.

Assistant required urgently, either sex, for busy Country Practice. —Please apply: Dr. LESLIE KING, The Fosse Way, Stow-on-the-Wold, Glos. Tel.: Stow 22.

Doctor, exempt, experienced in Psychiatry and its treatment by modern physical methods, seeks engagement in a mental hospital as Deputy or Senior Assistant.—Address, No. 539, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

For Sale, Mixed Practice in eastern suburb. Panel 1400. Good private practice. Scope unlimited. Located near station prepared for electrification and future L.C.C. estate. Beautiful surrounding country. Income over £2000 p.a. and increasing. Good house and garden.—Address, No. 540, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Photographs and Drawings for illustrations, records, &c. —Write for particulars: E. O. SONNTAG, 159, Bickenhall Mansions, Baker-street, W.1. WELbeck 8860.

Wanted to Purchase: Cameras, Enlargers, and all Photographic Apparatus, Exposure Meters, Tripods, &c., Microscopes, Binoculars, Cine Cameras, and Projectors. Prompt cash and high prices offered.—WALLACE HEATON LTD., 127, New Bond-street, London, W.1.

May we send specimen of COMPARATOR STETHOSCOPE for clinical trial? (No obligation); see issue of 18-7-42.—Capac Ltd., 2, Ullswater-road, London, S.W.13.

Harley Street and District.—A number of excellent Consulting ROOMS are available for full and part-time use at moderate rents. Particulars on application.—ELGOOD & Co., 1, Bentinck-street, Welbeck-street, W.1. Welbeck 8974.

The nicest way of taking the Natural Vitamins A, C, & D

Haliborange presents Allenburys tasteless and odourless Halibut-Liver Oil, associated with additional vitamin D and concentrated Orange Juice.

Haliborange is an excellent addition to the diet of babies as a precaution against rickets and scurvy. For older children, adolescents, or adults, it is a prophylactic vitamin tonic.

Each teaspoonful of Haliborange contains 1,950 international units of vitamin **A**, 280 international units of vitamin D, and 7 mg. of ascorbic acid (vitamin **C**).

In 5 and 40 oz. bottles at 2/6 and 15/6

HALIBORANGE

ALLEN & HANBURYS LTD · LONDON · E·2
TELEPHONE BISHOPSGATE 320(12 LINES) TELEGRAMS "GREENBURYS, BETH, LONDON"